

RECORD



All labels typed

9-4-4

Book #80

Collection and Field Note Book

No. 80

(Aug. 8, 1966 - Dec. 31, 1966)

(#8014 - #8232)

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Collection and Field Note Book

No. 80

(Aug. 8, 1966 - Dec. 21, 1966)

(48014 - 48232)

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E N D



Masashi Kawashima

3974 Tamahigashi

Tenryu ~~Shizuoka~~ Shizuoka

Japan



All labels typed

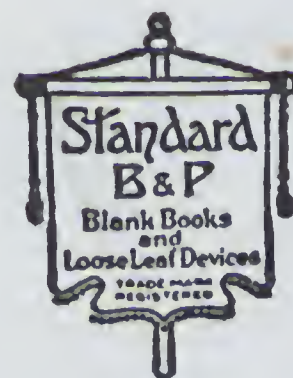
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Book # 80

begin # 48014

end # 48232

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Aug. 8 - Left Washington 5:30 p.m.  
via Chicago (2 1/2 hours stop,  
talking to Mrs. Katherine Chapman  
on hypothetical island invented  
for use in elementary economics  
text), arrived S.F. 10:30 p.m.

Aug. 9 - Hayward, Calif.

Aug. 10 - Left S.F. at 8 a.m. arr.  
Portland 9:30, left 10:15  
arr. Honolulu 1:50.

Talked to Barnourens, Yen,  
Chock, etc.

Aug. 11 - Left Hickam at 7:03  
via MAC charter DC6 (Northwest 48.)  
7:45 a.m. Arr. Johnston I.  
10:50 a.m.

Some small weedy veg.  
along air strip.

Several small trees, 1-3 m.  
tall. Tournefortia here and  
there. Yonca per-cepae on  
banks of sand. Casuarina  
10 m. tall. Thespesia populnea.  
Coccoloba uvifera.

Ficus (in pot)  
Lanceviera (laurentii) (cult.)

Boerhavia repens (white fld.  
leaves very broad, green, rounded  
at apex. (weed in small garden)

Portulaca oleracea (weed in garden)  
Sonchus oleraceus (weed?)

Codiaeum variegatum (cult.)

Criminum sp. (cult.) (small poor plants.)

Hymenocallis littoralis. (cult. pot)

Stenotaphrum secundatum? (weed)



Thespesia by terminal  
are 3-4 m. tall, fairly sturdy.  
Small garden by terminal  
seems to have some mixture  
of dark soil.

2 fairy terns seen.

Left Johnston 11:45 a.m.

Arr. Kwajalein 3:30 p.m.

Aug 12 - Kwajalein Islet  
Central area on seaward  
side.

Lawn of Lands BOB  
dominantly Euphorbia  
thymifolia, but with  
Desmodium canum, Dentella  
repens, Paspalum setaceum,  
~~Cyperus rotundus~~, Lepidurus  
repens, Heliotropium  
ovalifolium all prominent.

Phyllanthus amarus  
Synedrella nodiflora,  
Hedyotis corymbosa, Cyperus  
cf. polystachyos, Eclipta cf. sp.  
Fimbristylis cymosa all  
present. Portulaca oleracea, also.  
Also Eleusine indica.

Eragrostis tenella

Euphorbia hirta

Paspalum distichum

Cynodon dactylon

Cyperus rotundus

Tridax procumbens

Paspalum setaceum

Interrupted strip  
of beachrock, about 2  
beds, the upper 3-4 dm  
thick, irregularly  
pitted and pot-holed  
on upper surface, coarse  
grained, many corals.  
This is being undercut  
and broken. The upper  
half of this gently  
sloping surface has  
a good many shallow  
pools, mostly with  
somewhat overhanging  
sides, rather chalky  
looking inside, usually  
some fine sand in bottoms.

Around other ~~house~~ building  
and in lawns along roads  
in central area:

Dactyloctenium aegyptium

Cyperus cf. compressus

Digitaria cf. henryi

Cenchrus echinatus

Vernonia cinerea

Digitaria cf. timorensis

Chrysopogon aciculatus



Cultivated or obviously planted

*Cycas circinalis*

*Hibiscus cf. rosa-sinensis*

*Brassia actinophylla*

*Pedilanthus tithymaloides*

*Plumeria rubra*

*Coccoloba uvifera*

*Vitex trifolia*

*Hymenocallis littoralis*

*Cinnamomum asiaticum*

*Cocos nucifera*

*Casuarina equisetifolia*

*Tournefortia argentea*

*Pandanus tectorius*

~~Hymenocallis~~

*Sophora tomentosa*

Wild native species seen

*Triumfetta procumbens*

*Sporobolus pes-caprae*

*Lepturus repens*

*Fimbristylis cymosa*

*Wedelia biflora*

HOSPITAL

*Thymifolia* has  
much more  
than before.  
as also become  
sant, locally.  
has extremely common,  
in canum more  
an ever.

Tom Butler -

Mr. Brooksley - Former Chief

Brooksley

Mr. Henry Lum

Major Hall

Mr.

Garland

Mr. Ray

Mrs. Kay

Col. J. G.

Waterman

Col.

Healy



HOSPITAL

MR. BRASKEY - FORMERLY

TOM BUTLER -



Taxi 341

Boat  
dist. 2318



Cultivated or obviously planted

*Cycas circinalis*  
*Hibiscus* cf. *rosa-sinensis*  
*Brassia actinophylla*  
*Pedilanthus tithymaloides*  
*Plumeria rubra*  
*Coccoloba uvifera*  
*Vitex trifolia*  
*Hymenocallis littoralis*  
*Crinum asiaticum*

*Cocos nucifera*  
*Casuarina equisetifolia*  
*Tournefortia argentea*  
*Pandanus tectorius*  
~~*Hymenocallis*~~  
*Sophora tomentosa*

Wild native species seen

*Triumfetta procumbens*  
*Sporobolus pes-caprae*  
*Lepturus repens*  
*Fimbristylis cynosu*  
*Wedelia biflora*

*Euphorbia thymifolia* has become very much more abundant than before. *Dentella* has also become very abundant locally. *Eclipta* is also extremely common, and *Desmodium canum* more abundant than ever.

People on Kwaj.

Mr. Robert Haley

Broskey

Mr. Henry Lum

Major Hall

Mr. Garland

Mr. Ray Mrs. Ray

Col. J. G. Waterman

Col. Healy



nos. checked

6

1966 Johnston I. - Marshall Is.

Labels typed

Aug. 11 - Johnston I.

48014

*Ficus*

planted in pot

Aug. 12 - Kwajalein Atoll  
Kwajalein Islet

15

*Eragrostis*

rare along walks in  
edges of lawn

Aug. 13 - Kwajalein Islet  
in lawns around  
buildings

16

*Eclipta*

common locally

17

*Dentella*

very abundant locally

18

*Hedyotis corymbosa* (L.)

very common along walks

19

*Cyperus* cf. *polystachyos*

locally common

20

*Hedyotis corymbosa* (L.)

locally common

21

*Fimbristylis cymosa*

common

22

*Heliotropium*

locally common

23

*Fimbristylis cymosa* R. Br.

uncommon (with #48021)

24

*Euphorbia* "thymifolia"

locally very abundant

Kwajalein

7

shrub 1 m. tall; figs turning  
reddish when ripe, <sup>achenes</sup> seeds  
orange-red.

depressed clump,  
culms spreading to  
somewhat ascending.

heads white; plants  
depressed (possibly from  
mowing)  
forming a dense mat  
on ground, flowers white,  
corolla lobes toothed.  
plant procumbent to  
ascending, corolla nearly white.  
culms spreading to  
ascending.  
prostrate, flowers pink.

culms ascending, caespitose.  
flowers white.

loosely caespitose, culms ascending.

prostrate, forming a yellowish  
green mat.



8

1964 Marshall Is.

48025  
#5*Paspalum setaceum*  
common

#2

26

*Digitaria henryi*  
small colony in lawn  
near <sup>air</sup> terminal

#2

27

*Digitaria timorensis*?  
common locally near air  
terminal (also seen in housing area)Aug. 13 - Kwajalein Islet  
planted in housing area

#1

28

*euph.?*  
in very sheltered place

#2

29

~~*Thesphastia*~~ *Jaquonia aurantica*  
2 trees

#2

30

*Tabebuia* ~~*rosea*~~  
one seen

#1

31

*Kalanchoe*?

#2

32

*Phyllodendron*?

#1

33

*Cordia sebastena*

#1

34

*Acalypha wilkesiana*

Kwajalein Atoll

9

culms decumbent  
from small tufts.prostrate, forming thin  
mat, fruiting culms  
ascending.immature shrub 1.5 m. tall,  
lactiferous; sterile.small tree 3 m. tall,  
flowers bright vermillion  
corolla sub-waxy, with  
10 lobes in 2 series, the inner  
smaller; fruit immature  
(mature ones larger, yellow).small tree, 6-7 m. tall,  
flowers pale pink,  
very fleshy herb, leaves  
gray, somewhat in  
one plane; sterilevine, climbing on houses,  
leaves starting sagittate  
on young plants, becoming  
more divided as plant  
gets larger; spathe  
white, turning greenish.

shrub 2 m. tall; corolla vermillion.

shrub 2 m. tall, leaves  
coppery-reddish green; stamens dull  
red.



Cultivated plants - from photos

- ✓ *Polypodium scolopendria*
- ✓ *Grourga oleifera*
- ✓ *Ficus benjamina*
- ✓ *Alpinia purpurata*
- ✓ *Baassia actinophylla*
- ✓ *Philodendron pinnatifidum*?
- ✓ *Erythrina variegata*
- ✓ *Citrus aurantifolia*
- ✓ *Plumeria obtusa*
- ✓ *Pritchardia pacifica*
- ✓ *Pseuderanthemum carutherian*  
var. *atropurpureum*
- ✓ *Psidium guajava*
- ✓ *Plumeria rubra*
- ✓ *Araucaria excelsa*
- ✓ *Acalypha wilkesiana*
- ✓ *Sophora tomentosa*
- ✓ ~~Hel~~ *Tournefortia argentea*
- ✓ *Musa sapientum*
- ✓ *Asplenium nidus*
- ✓ *Scaevola taccada*
- ✓ *Crinum asiaticum*
- ✓ *Ipomoea pes-caprae*
- ✓ *Hymenocallis littoralis*
- ✓ *Cyrtosperma*? *Cryptostegia grandiflora*
- ✓ *Catharanthus roseus*
- ✓ *Pseuderanthemum carutherian*
- ✓ *Pedilanthus tillymaloides*
- ✓ *Polyscias guilfoylei*
- ✓ *Hibiscus rosa-sinensis*
- ✓ *Nephrolepis* (*glaucophylla*)
- ✓ *Zephyranthes rosea*
- ✓ *Coccoloba uvifera*

- ✓ *Calophyllum inophyllum*
- ✓ *Polyscias scutellaria*
- ✓ *Codiaeum variegatum*
- ✓ *Alocasia macrorrhiza*
- ✓ *Rhoeo spathacea*
- ✓ *Caladium bicolor*
- ~~*Polycaea*~~

Seen in housing area

- Hibiscus tiliaceus*
- Philodendron* (2 spp.)
- Polyscias fruticosa*
- Opuntia cf. basilaris*
- Cereus cf. serpentinus*
- Hyloteris undatus*?
- Philodendron* spp.
- Rhaphidophora aurea*
- Merremia tuberosa*  
(seed took 1 1/2 years to germinate)
- Cordyline fruticosa* (reddish form)
- Polyscias tricochleata*

Seen in nursery

- Wedelia triloba*
- Polyscias scutellaria*
- Ficus benjamina*
- Terminalia catappa*

see page 27

*Tabebuia rosea*  
*Theophrastia*



Aug. 14 - Enabuy I.

Pagoon beach about 200 m. s. of pier -

beach-rock exposure

Photos

Roll 1 last 4 exposures.

2 general views looking north, 1 close-up of place at low tide where sample was broken off, one at about 5 m of same place

Sample taken at water level at 8:45 a.m. (no. 1)

Photos

Roll 2 first 3 exposures close ups of slab with solution pits a little below high tide level.

These pits are slightly ~~under~~ undercut but show some signs of abrasion.

Sample 2 is from the vertical edge of this slab. Sample 3 (same piece) is from the horizontal surface of slab.

Sample 4 is from the lining of solution pits on surface of slab.

Sample 5 is from abraded, polished surface of lower layer in this series, just below the slab. Polished white.

Sample 6 is a piece of a polished piece of coral wedged between two large slabs.

Sample 7 - pebbles from a small pot-hole-solution pit.

Littorina and Nerita occasional in pits and crevices.

On windward beach about 200-300 m from south end.

Broad stretch of eroded beach-rock.

Photos

2 general views, 1 south, 1 north, 3 close-up of solution pits.

The pits sampled are at ~~at~~ just below high tide level, not or scarcely undercut. Other larger ones seen that were undercut.

Sample 8 - various pieces of inner surface of one of these pits.

The general surface of this beachrock is darkened by algal. Something has produced various white marks.



or scratches on this sample 9 looks like biting by fishes. Samples 10 are merely speckles of white.

Sample 11 -

Beach rock ramp near high tide level very pitted with smooth gray somewhat overhanging pits samples from overhang surface

Much of the interior of this islet is open, since World War II. In 1950 there was a deep blanket of *Ipomoea pes-caprae* and *Wedelia*. Now it is mostly *Wedelia*. There are no shrubs or trees coming up through it except old ones that were there before the clearing.

~~Thaenaria~~ is the dominant grass under trees in most places, but sometimes *Lepturus* is more important.

List of plants seen

*Wedelia biflora*  
*Ipomoea pes-caprae*  
*Ipomoea tuba*  
*Scaevola taccada*  
*Vigna marina*  
*Tournefortia argentea*  
*Hibiscus tiliaceus*  
*Guettarda speciosa*  
*Premna obtusifolia*  
*Lepturus repens*  
*Thuarea involuta*  
*Pemphis acidula*  
*Pandanus tectorius*  
*Cocos nucifera*  
*Fimbristylis cymosa*  
*Cassytha filiformis*

The only birds seen were 2 reef herons, one blue, one white, sitting together on an old steel tripod near the center of the islet, in from the lagoon shore, and two wandering tattlers on the seaward & lagoon shore. 2 brown boobies sitting on buoys on the way back to Kwajalein I.



*Hibiscus tiliaceus* - dec.  
loosely and irregularly  
branched tree to 8 m. tall,  
leaves orbicular-cordate,  
whitish beneath,  
shortly pointed,  
stipules oblong, caducous,  
leaving an irregular  
ring around the stem;  
cymes few flowered,  
with a pair of stipular  
bracteoles subtending  
each pedicel; pedicels  
curved downward;  
~~receptacle~~ <sup>with</sup> campanulate  
involucre of about 10  
short teeth, closely  
appressed to calyx.  
calyx lobes lance-  
ovate, acuminate,  
corolla campanulate,  
yellow with a deep maroon  
center, the yellow part  
turning dull red before  
corolla falls,  
staminal column  
antheriferous to near base,  
yellow, style branches  
and tip of united portion  
exserted, ~~stigma~~ <sup>stigma</sup> maroon,  
stigma capitate, small,  
very dark maroon.

Aug. 14 - Kwajalein Islet  
greasy ditch from  
air strip to tank farm,  
lined with luxuriant  
growth of *Cyperus poly-*  
*stachyos*, with  
*Eclipta*, *Eleocharis*,  
*Cyperus perax*,  
*Digitaria cf. timnensis*,  
*Cenchrus ciliaris*,  
*Tridax*, *Stachytarpheta*  
*jamaicensis*.  
Patches of *Bidens radiata*  
in field along air strip.

One small tree *Spathodea*  
*campanulata* behind old  
terminal bldg. about 7 m tall,  
flowering.

*Plumeria* and papaya also  
persisting

The following recent  
introductions have  
remained or become abundant,  
at least locally:

*Paspalum setaceum*  
*Cyperus rotundus*  
*C. polystachyos*  
*C. compressus*  
*Euphorbia thymifolia*  
*E. hirta*  
*Vernonia cinerea*  
*Tridax procumbens*

(to p. 22)



nos. checked 1966 Marshall Is.

18

Labels typed

Aug. 14 - Enubuj Islet

48035 Hibiscus tiliaceus  
at top of lagoon  
beach at foot of old pier

35a (lichen)  
on rotting coconut stump on lagoon beach

Aug. 14 Kwajalein Islet  
in road gutter

36 Chloris  
occasional

37 Cyperus polystachyos  
common

38 Cyperus compressus  
common

in shallow ditch  
near air-field.

39 Cyperus rotundus  
common

40 Stachytarpheta jamaicensis  
occasional

41 Eclipta  
very common

42 Eleocharis geniculata  
occasional

43 (sorgh)  
rare

4

roadside near air-field

44 Eragrostis  
common

45 Paspalum setaceum  
common to abundant

Kwajalein Atoll

19

small tree 7-8 m. tall,  
flowers yellow, turning  
red, center deep maroon  
nodding.

spikelets black at maturity;  
culms decumbent at  
base, from a central  
root crown, erect.  
small erect tufts.

erect, small tufts,  
spikelets green

rosettes and culms  
not caespitose.  
flowers light blue-violet  
rays white; plant erect.

caespitose

erect, flowers dull buff-green.

culms spreading

culms spreading to ascending



nos. checked = labels typed  
20 1966 Marshall Is.

48046 *Emilia pavanica* (Burm. f.) Rob.  
rare, only one seen.

2 47 *Chloris*  
locally very common

2 48 *Cyperus rotundus*  
common

5 49 *Crotalaria*  
occasional on bare  
gravel

1 50 back of old terminal Bldg.  
*Spathodea campanulata*  
single planted tree

2 51 Aug. 15 - Kwajalein Islet  
seaward side of air-field  
*Lepturus?*  
forming a sparse mat on  
compacted coral soil

2 52 *Lepturus repens* var.  
forming dense mat on  
coral road bank

5 53 *Physalis angulata* L.  
occasional on road embank-  
ment and around country club  
grounds.

5 54 *Physalis angulata* L.  
occasional on road embank-  
ment and around country  
club grounds

2 55 *Ipomoea batatas* (L.) Lam.  
on coral earthy pile at  
country club, facing away from sea.

Kwajalein

21

flowers red.

culms erect, decumbent  
at base, ripe spikelets black.  
rosettes and culms isolated.

herb reaching 1 m. tall;  
flowers yellow, outside  
of banner somewhat  
brownish but definitely  
not striated.

tree 8 m. tall, flowers  
scarlet.

prostrate, sterile.

prostrate.

much-branched low  
herb, flowers yellow with  
deeper greenish yellow center.

herb about 0.3 m. tall,  
flowers pale yellow, deeper  
yellow in center.

luxuriant sterile vine.



(Ctd. from p. 17)

*Eclipta alba**Eleusine indica**Desmodium canum**Dentella repens**Cynodon dactylon**Paspalum distichum**Hedyotis corymbosa**Heliotropium ovalifolium**Eragrostis <sup>tenella</sup> ~~anabilis~~**Eragrostis* sp.*Bidens leucantha* (abundant around far end of air field)*Portulaca oleracea**Coryza canadensis* (plentiful around air field)

The following have remained scarce or local, or have become more restricted, or disappeared.

*Emilia sonchifolia* (rare)*Pluchea indica* (very local)*P. odorata* (not seen)*P. forbergii* (not seen)*Coryza canadensis**C. bonariensis* (not seen)*Mimosa pudica* (not seen)*Stachytarpheta jamaicensis* (occasional)*Cyperus odoratus* (rare)

(scrub)

(rare)

*Lonchus oleraceus* (not seen)*Euphorbia prostrata* (not seen)

On fishing trip, west of south half of atoll, birds in some numbers were seen over schools of fish. Noddies, white-capped noddies, a few fairy terns, and an assortment of boobies.

party caught

1 yellowfin tuna (12 lbs.)

1 wahoo or ono.

2 "rainbow runners"

13 bonito

A moderate trade wind breeze was blowing, a great improvement over the past 3 days, which were dead calm, hot and sticky.



Aug. 19 - Ligan Islet.

This is really 2 islets connected by an isthmus, and the southernmost has a small satellite lagoonward.

The isthmus is really double, two strips enclosing a fair-sized pond.

Lagoonward is a large rubble flat as long as the entire islet. The lagoonward side of this is arcuate and is a strip of consolidated rubble about 20 m or so wide. The inner part of the flat is lower and not consolidated, and scarcely dry at low tide.

Sample 12 was from the notch on a riggerhead at the inner edge of the consolidated strip. It was riddled with a boring cirriped (specimens).

Sample 13 was from the flat surface of the consolidated strip. Its upper surface is speckled, and seems representative of the

general surface of the strip, except that it is a smooth piece.

Its under surface ~~is~~ was more or less sheltered from light. The cirripeds lived in small colonies on this surface, conspicuously golden hairy.

The seaward side of the isthmus is a double, anticline-like series of beachrocks. The lagoonward part of many rather thin beds of a coarse sand texture, not very well consolidated. The seaward side is of fewer beds of very coarse consolidated rubble. No solution pits on any of it. The seaward strip of beachrocks extends not only along the isthmus but along the north islet, and probably the southern, too, but that area is altered by old Japanese construction of a ramp.

The north islet was briefly examined. There is a seaward fringe of *Scaevola*, then a strip



planted to coconuts, then a strip of *Ochrosia* forest, then old large *Pisonia* with quite a bit of young *Ochrosia*, very little young *Pisonia*, then on lagoon side a tall scrub of *Pemphis*, *Scaevola*, *Guettarda*, *Tournefortia* and *Terminalia*.

In the interior the ground is bare except in the coconut area where there is a spotty ground cover of *Polypodium scolopendria* and *Tacca*. *Canavalia cathartica* is common on both seaward and lagoon sides.

Birds are fairly numerous here. Wandering Tattlers on both seaward and lagoon sides, ruddy turnstones on lagoon flat, a number of fairy terns in the *Pisonia* forest and in edges of it. Common noddies. A tern shaped something like a sooty tern but with a light gray back - 3 of them flew by, fast, making a harsh noise, on seaward side. Did not see them very well.

Other plants seen were *Morinda citrifolia* and *Lepturus repens*, neither common, and *Excoecaria* (rare)

Kwajalein Islet - nursery plants seen:

*Terminalia catappa*  
*Zephyranthes rosea*  
*Alpinia purpurata*  
*Wedelia triloba*  
*Musa sapientum*  
*Alocasia macrorrhiza*  
*Cassia alata*  
*Asplenium nidus*  
*Polyscias guilfoylei*  
*Pedilanthus tithymaloides*  
 (variegated form)  
~~*Casuarina*~~ *equisetifolia*  
*Euphorbia cyathophora*  
~~*Platyedra*~~ *Hibiscus tiliaceus*  
*Philodendron pinnatifidum*  
*Philodendron* sp. (5 leaflets)  
*Thespesia populnea*  
*Philodendron* (large cordate lf.)  
*Moringa oleifera*  
*Polypodium scolopendria*  
*Rhaphidophora pinnata*?  
*Polyscias scutellaria*  
*Hymenocallis littoralis*  
*Cocos nucifera*  
*Plumeria obtusa*  
*Pseuderanthemum caruthersii*  
*Citrus aurantifolia*  
*Lumnitzera littorea* (from lib)

*Cryptostegia grandiflora*  
*Spathodea campanulata*  
*Ficus benjamina*  
*Viburnum rose-avenae* (or hybrid)  
*Prunum guajana*



nos. checked  
28

Labels typed

+48056  
2

1966 Marshall Is.

Aug. 15 - Ligan Islet

*Terminalia samoensis*  
rare in scrub back of  
lagoon beach

+2 57

*Intsia bijuga*  
rare on seaward side in  
edge of coconut plantation

+2 58

*Polypodium scolopendria* Burm. f.  
common on coral boulders  
in coconut plantation

+3 59

*Lepturus repens*  
very local in small  
opening in lagoonward  
scrub back of beach.

Aug. 15 - Kwajalein Islet  
in nursery

+2 60

*Plantago major* L.  
very local weed

+2 61

*Cryptostegia grandiflora*  
planted

+1 62

*Schinus terebinthifolius*  
planted

+2 63

*Pilea microphylla* L.  
weed on ground and in pots

+2 64

*Psidium guajava* L.  
planted

+2 65

*Euphorbia glomerifera* (Millsp.)  
weed

+1 66

(*Asptasia*?) (*Malpighia*?)  
planted

+2 67

*Wedelia triloba*  
planted, growing vigorously

Kwajalein atoll

29

sterile shrub

shrub 1 m. tall; sterile.

Tufts.

leaves appressed to soil.

shrub; lactiferous;  
flowers purple, corolla  
throat flattened.

shrub; flowers pale greenish.

shrub 3 m. tall, fruit  
immature.

shrub; sterile.  
(flower said to be purple, trumpet-like)  
prostrate, heads yellow.



nos. checked

30  
Labels typed

48063

X 1

1966 Marshall Is.

*Rhaphidophora* (a *Monstera*?)  
planted

around buildings

X 5 69 *Scaevola taccada* (Gaertn.) Roxb.  
planted as ornamental  
(native to atoll)

X 2 70 *Desmodium canum*  
abundant in lawn

Kwajalein atoll

31

heavy vine, leaves  
without holes; fruit  
immature.

well formed densely  
branched shrub 4 m  
tall, flowers white;  
ripe fruits white.  
(pickled flowers)  
flowers maroon.  
(note some simple leaves)



1946

Aug. 16 - Left Kwajalein 9:50 a.m.  
arrived Honolulu about 9 p.m.

Aug. 19 Left Honolulu at 12:30

Aug. 20 Arr. Tokyo

Aug. 27 Left Tokyo 1:30 p.m.  
arr. Nikko 3:30 p.m.

28 Left Nikko 5:00 p.m.  
arr. Tokyo 7:00 p.m.

30 Left Tokyo 7:30 a.m.  
arr. Oshima 1:00 p.m.

31 Left Oshima 3:30 p.m.  
arr. Tokyo 7:00 p.m.

Sept. 4 Left Tokyo 7:00 a.m.

7 arr. Kyoto 6:00 p.m.

10 Left Kyoto 7:20 a.m.  
arr. Seoul



Aug. 27 - trip to Nikko

Crossed Arumida River - filthy.  
As soon as city begins to  
thin out the vacant spaces  
are filled with rice patches  
in varying stages of maturity  
and gardens. A few weedy  
patches - *Coryza* abundant,  
*Miscanthus*?

Phragmites along canals

Around houses

*Ficus carica*

*Yucca* sp.

*Photinia* sp.

*Pinus* sp.

*Platanus* sp.

*Larix* sp.?

*Populus* sp.

*Salix* cf. *babylonica*

*Ilex* sp.

*Cinnamomum camphora*

*Castanopsis* sp.?

*Chamaecyparis*

*Hibiscus syriacus*

*Acer palmatum*

*Thuja* or *Chamaecyparis*

Bamboo

*Helianthus annuus*

*Luculia*?

*Cryptomeria japonica*

*Castanea*

*Paulownia*

*Alcea rosea*

*Ailanthus*?

In gardens

onion

maize

taro

beans

egg plant

sesame

sweet potatoes

milo maize or other forage

soy beans

Morus

*Hibiscus* cf. *esculentus*

Gradually the land  
becomes agricultural  
with scattered houses and  
villages, mostly rice.

Kurihashi

Tone River - broad, sandbars,  
Phragmites, large flocks  
of what look like cattle  
egrets.

This entire region is an  
enormous completely flat  
plain. Rivers and streams  
are contained between  
levees.

After 50 minutes of  
riding, a slight relief



appears. Very slightly incised plain, becoming more and more rolling. Thickets and probably planted patches of low woods on knolls.

Mountain can be seen on left.

Then a few small wooded hills - woods planted.

Mts. much closer on left.

hawks + crows seen.

Then mts. are much more distant on left and ground flat again.

Kassemba

Mts. closer again.

Another river - broad gravelly bed with shrubby *Salix*.

Wooded hills close by to left.

Negori

Moriyama

Rr. continues to skirt base of hills.

After an hour and 20 minutes of travel the rr enters the hills. Rice in flat valley bottoms and on terraces on gentler slopes.

Ornamentals (ctd.)

*Lagerstroemia indica*

Most slopes wooded. Then out into a medium sized valley.

Kita-Kanuma

Valley narrows toward head. Sides very steep and wooded. Forest planted, in rows, clear-felled.

Itaga.

Valley winds somewhat. Cultivation toward sides diversified, mostly rice toward center.

Then rr. is in a deep cut, then another valley, or a meander of first one.

Then out onto edge of plain again. Woods and thickets quite common - planted *Thuja*, etc.

Rolling land again. Terraced. Patches of bamboo. Woods locally common - much *Cryptomeria*. A magnificent double row of old *Cryptomeria*.



## Nikko

photo

Two bod of farm house  
below Nikko.

2 bod from hotel window  
Nikko

Daiya River  
Stream running  
through Nikko is clear  
but certainly carries  
some sewage. The banks  
and very narrow flood  
plain tangled with  
many kinds of broad-  
leaf weeds, some grasses  
incl. *Miscanthus*,  
*Setaria*, etc. and shrubby  
*Salix* and *Viburnum*.

In the entrance to a  
store a big fastigiata  
scouring rush type *Equisetum*  
was growing in a pot as  
an ornamental. Also a  
handsome *Selaginella*  
with large sub-rosettes.

Aug. 28 - Nikko

photos

bod from in front of hotel and  
from hotel windows.

Several bod. in botanical  
garden.

The botanical garden is  
largely planted in a more a

less natural fashion,  
mostly wooded, but  
with some open lawn,  
ponds, and beautiful  
marshes. A few alpine  
garden.

Around temples many  
magnificent *Cryptomeria*  
and *Thuja* trees. Gives the  
character to the entire  
landscape.

Left for Lake Chuzenji at 1:50 p.m.  
*Miscanthus* very common  
along road. Flowering.

Very rocky river-bed.  
steep slopes. mixed  
coniferous forest, some mixed  
broadleaf scrub forest.

Along ~~the~~ toll road mixed  
broadleaf forest. Many  
switchbacks. Landscape  
badly scarred by 2 toll  
roads. Forest changes  
composition upward. *Fagus*  
becomes dominant, at least  
locally. Even so, forest is  
quite mixed. Few or no conifers  
around lookout-point, top  
of funicular & bottom of cable.

Kedon Falls is a typical  
vertical drop as often  
found in volcanic regions -



flowing over a dam of columnar basalt. The exhibit of columns is striking, and around the basal unconformity of the flow are numerous seeps of water forming a fringe of tiny falls around the base of the big one. Below is a series of cascades.

Around Lake Chuzenji - mixed broad-leaf forest - Acer, Ulmus, Quercus, Prunus, Betula, Fagus. One of commonest weeds is *Rudbeckia laciniata*. Also *Oenothera biennis*.

Photos

3 b + w of Ryūzū Falls + forest beside it.

Shores of lake are rather marred by buildings along highway. But general view even in semi-fog is magnificent.

Along old toll road the forest is young but has to some extent covered the scars. Very rich in species.

Aug. 30 - trip by train Tokyo to Kamakura -

Just south of Yokohama, <sup>Hodogaya</sup> is an area of deep dissection of a low plateau - possibly 50 m. with steep slopes, flat-bottomed valley - before Totsuka.

These little hills are mostly wooded. Pinus, etc. The flat narrow valley bottoms are cultivated.

Similar terrain ~~for~~ to Ofuna but mostly back a bit from the m.

Oshima I. below Kowakien Hotel -

Low, irregular forest of Prunus, Alnus, Annamomum, Camellia, Ligustrum, Clerodendrum, Podocarpus, Viburnum, Mallotus, planted patches of Cryptomeria.

In places where the forest is continuous it is a young, unstratified forest with trees to 7 cm dbh + 6-7 m tall, with a dense layer of kasa 1-1.5 m. tall.

Vines, such as Pueraria lobata, Paederia sp., Smilax sp., Clematis (close to C. virginiana), Humulus sp.



Aug 28 - Nikko

48071

*Oplismenus compositus*  
occasional under cryptomeria  
in temple grounds

Aug. 28 - Lake Chuzenji,  
Nikko National Park  
in herbaceous ground  
cover in disturbed deciduous  
forest

x2 72 *Epilobium*  
in tiny dry rivulet

x2 72 *Ranunculus*  
common locally

x2 73 *Geranium*  
occasional

x1 74 *Polygonum*  
occasional

erect, flowers white.

erect, flowers yellow.

decumbent; flowers pinkish  
white

semi-vine-like,  
flowers pinkish-white.



Aug. 31 - Mihara Volcano  
 Oshima I. in caldera  
 rather rough lava  
 field with *Polygonum*  
*cuspidatum* in cracks  
 also *Miscanthus* and  
~~an~~ abundant  
 moss.

photos

More rare, a large  
*Polystichum*, *Hydrangea*,  
 and *Poa* sp. *Alnus*,  
*Rhododendron* sp.  
*Weigela* sp. (?)

The *Polygonum*, esp. is  
 not confined to cracks  
 but colonizes freely.  
 Moss on fine material  
 accumulations.

A number of other  
 plants are common along  
 the ~~road~~ horse trail

On the newest flow,  
 typical aa, a very  
 sparse colonization,  
 mostly *Polygonum*.  
 This very abundant  
 in a strip along the  
 trail.

Around summit  
 building a few tufts  
 of *Miscanthus* and  
 plants of *Polygonum*.

Just below summit,  
 on older surface abundant  
*Miscanthus* and considerable  
*Polygonum*.

This old surface,  
 between newer flowing  
 extends down to caldera  
 floor.

This surface is pahoehoe  
 with an accumulation of  
 pyroclastic material of  
 all sizes filling the  
 cracks. Abundant  
*Miscanthus* and  
 considerable *Polygonum*  
 but no other <sup>moss</sup> plants  
 (except one small shrub  
 along horse trail), but some  
 moss and a crustose lichen,  
 prob. young *Stereocaulon*.

Coming up from below, the  
 scrub forest with lasso  
 layer gradually became  
 lower and more dominantly  
 lasso, then shrubs with  
~~Para Tree Miscanthus~~ considerable  
*Miscanthus* in patches  
 and distributed in the  
 scrub. The composition  
 includes many of the  
 trees common in the forest  
 below, but *Hydrangea* (the



blue-flowered one seen at  
Nikko) very common here  
(possibly same as one  
seen below), *Ilex crenata*  
relaff. common, also the large,  
spiny-leaved *Ilex* seen cult.  
in Washington (*sect. Aquifolium*)  
all these in dwarfed form,  
forming a dense scrub  
1-2 m. tall. This extends  
to the top of the rim of the  
caldera.

Around toward the  
national park are patches  
of *Castanopsis*, taller than  
general vegetation, twisted  
and branched trunks.

*Eurya* and *Lambucis* are  
common in scrub at middle  
elevations.

On the east side a vast  
ash bed, bare at highest  
elevations, below caldera rim.

In area above road, stabilization  
of loose ash being carried out  
by fences of woven saplings and  
*Miscanthus* plantings in  
contour rows.

At low elevations

Sept. 4 - Tokyo - Matsumoto by train.

Left Tokyo 3 am.

Outside the city mainly  
cultivated land - rice, gardens.  
Along river some wet land  
with stands of *Polygonum*.

Kachioji

Then some low hills with  
woods and thickets, - flat  
valley bottom largely  
covered by houses and  
gardens.

Hills soon become very  
steep, covered by plantations  
of conifers, even on very steep  
slopes. Some broadleaf trees  
in canyon bottoms.

Long tunnel.

Very mountainous landscape.  
Slopes planted to trees.

A large valley surrounded  
by mountains - Sagamiho. <sup>Perami</sup>  
Several tunnels, then another  
valley, not so large.

Forest on slopes now largely  
broad-leaf (beech?), some  
conifer plantings.

Some grain patches in  
flat valley or on terraces -  
dry land rice, also gardens.  
Flat valley bottom deeply  
incised by river gorge.

Shiotzu. Bamboo on vertical  
walls of gorges.

(to N. 50)



nos. checked

48

1966 Japan

Labels typed

Aug. 30 - n.e. side of island,  
near Kowaki-en Hotel  
in edges of forest

48075

*Paederia*

x2

common

76

*Tovara*

x2

occasional

x2

77

*Euphorbia*

common in dooryards

Aug. 31 - summit caldera  
of Mihara-yama  
on rather rough basaltic  
lava

x2

78

*Polygonum*

very common

x2

79

(grass)

~~rather rare~~

x2

80

(moss)

on accumulation of pine  
material.

x1

81

(moss)

occasional to common on  
accumulated pine material

Oshima I., mouth of  
Tokyo Bay

49

vine, foetid when broken;  
flowers pale lavender  
with deep purple center.  
erect, fruits red.  
very prostrate; leaves  
spotted.

spreading low herb;  
flowers white.  
tufts.

bright green



## Tunnels.

Yanagawa. Incised flat valley bottoms. Flat terraces cultivated. Garden running somewhat on slopes.

Zea mays, mung, onions, cucumbers, rice Diospyros, Colocasia, beans.

Many bare patches on steep mountain-side, but these seem to be forest regeneration or plantings.

## Kisawa

Steep gorge walls are wooded.

Mts. become less steep, generally, but some spectacular cliffs on right.

General pattern in these valleys is a flat valley bottom between mountains with a deep gorge meandering back and forth across it, with cultivation on the resulting terrace fragments, forest on gorge walls and mountain slopes. The

slopes show a mosaic of patches of forest (mostly planted) of varied ages. Otsuki.

Diospyros kaki etc. very common around houses.

Valley being very badly scarred by road construction

Gorge becomes shallow and channelized. Valley rather wide. Villages common. Much mung for silk-worms. some grapes on trellises. Much rice. some Zea, beans, taro, soybean.

Valley narrows to a gorge, then widens again.

Miscanthus scattered, flowering. Pueraria common, forming blankets over slopes and covering bushes. flowering. Long tunnel.

## Hajikano

Valley bottom not very flat. Gentler slopes cult. Gorge deep. Wooded. Forest on mt. slopes mostly beech(?).

Katsunuma - emerged from tunnel into very wide valley (other side not visible in haze).

On gentle slopes at foot of mts. extensive vineyards, some peach orchards, etc. Grapes on trellises. Densely populated valley.

## Enzan

Valley bottom wide and flat - route crosses it.

Intensively cultivated, mostly vineyards and orchards - peaches, apples, etc. scattered clumps of bamboo. Paulownia trees.



## Yamanashi-shi

Crossed river with wide boulder-gravel bed, enclosed by levees.

Some rice patches mixed with orchards and vineyards.

Lower slopes of mts. on other side (to right) mostly cleared and cultivated.

## Isawa.

still extensive vineyards, almost 100% of cultivation here.

Kanento Vineyards on slopes as well as on flat land.

## Kofu - large city.

As city thins out, open spaces are mostly in rice, a few vineyards and gardens. Some mulberries. Outside of city rice with patches of Morus and Vitis. This part of valley is low and very flat.

Gentle slopes to right ~~at~~ foot of mts. all in vineyards. Tunnel. Rolling land in vineyards.

Flat bottom of Kamanashi river mostly in rice. Low hill with Morus, bamboo.

Country becomes more hilly on other side

~~Morus~~ Morus patches alternating with gardens and woods, bamboo.

Rice in flatter bottoms. Considerable area of low hills. More and more wooded. Still on right side of main valley.

The RR climbs steadily. Landscape a mixture of hills and rice fields, some Morus and gardens. Rice is headed out but still green or yellow green. Valley of Kamanashi on left is quite deep.

More and more pine in landscape. Patches, mostly on hill tops.

This area is generally a very broad somewhat dissected foot slope to the mts.

Up the valley it gets rougher for a while.

Then the valley opens out a bit and the mts. change character. They are high, but slopes are gentler. Much land planted. Valley bottom mostly in rice.

## Aoyagi.

## Chino

## Kamisuwa

Large reservoir in wide valley.

## S. Suwa.

Flat valley bottom in rice.

## Shimosuwa

## Okaya



Climbing again. Rice terraces and gardens, wooded hills, and mountains farther away.

Flowers are much more abundant and colorful in this mountain region than in Tokyo.

*Phlox paniculata*

*Hibiscus*

*Lilium*

*Tagetes*

*Cosmos*

*Lagerstroemia*

*Rudbeckia*

*Monarda* & *delyria*

Kawagishi

Valley, narrow, slopes more steep.

Tatsuno

Small flat valley surrounded by steep wooded mts. Many areas of timber have been recently cleared, in vertical strips.

Valley bottom and lower slopes terraced - in rice, etc. one patch of *Fagopyrum*.

Ono

RR continues to climb. Hills are lower, wooded.

Tunnel.

*Polygonum cuspidatum* on cuts very spectacular.

Tunnel. Then a very broad valley to rt. Can't see across it in the haze.

Then immediately back into hills. Fairly large valley. Then large valley

again.

Shiojiri - horrible industrial city. Flat valley, with orchards and vineyards, rice gardens. (tomatoes, soy beans, pea, mums, *Helianthus*, onions)

Weedy lots dominated by *Conyza*. Rows of soy beans on levees between rice fields.

City gets thicker toward Matsumoto, but still considerable rice.

Matsumoto - Kamikochi by bus. left M. at 1:15 p.m. 600 m

Rice fields with soy beans on levees. Some egg plant, tomatoes, carnations, Taro, beans, Mums, pea, Apples, yam, grapes.

Very soon the valley narrows between steep high mts. Densely wooded. Lower slopes mostly mums.

Spectacular canyons, many hundreds of m deep, densely wooded. Mostly broadleaf, some *Tsuga*.

A series of dams are being built here by Tokyo Electric Co. Will destroy this magnificent scenery completely.



Sept. 5 - Kamikochi

on flat valley bottom  
a forest of Larix with some  
admixture of Ulmus, Betula,  
etc. and a complete ground  
layer about 1 m high of Lasa  
of mts up valley.

photos  
L + Wphotos  
back

On lower mt. slopes  
just above floor of valley  
the forest is largely Tsuga  
with admixture of other  
conifers and broad-leaf trees,  
esp. Betula spp., Prunus spp.  
Lilium spp., with solid ground  
layer of Lasa.

Wherever there is a stream  
or a sharp irregularity  
in ground there are other  
plants, such as Dryopteris  
cf. paleacea, Blechnum spp.,  
Cornus canadensis, Aconitum  
spp., Eupatorium spp., Aster spp.  
esp. in disturbed places.  
The river bed is broad  
and very much filled  
with gravel and boulders  
gravel. Salix spp. are  
common in river bed.

Polygonum  
spp.

Myrjia ponds are  
charming little ponds  
with islands - islands

and shores surrounded  
by Sphagnum marshes.  
A few ducks in ponds.  
Very beautiful. The  
walls of the valley  
are incredibly steep  
and craggy, forested  
to top where possible,  
bare cliffs, grassy  
talus, small streams,  
etc. streams entering  
river apparently carry  
enormous loads of  
gravel when water  
is high. One large  
gravel fan has  
buried the bases of  
trees on flat bottom  
of valley. Mostly dead.  
Old trail up rt. side  
of valley has cut banks  
covered by ferns, various  
other plants. New road  
on left side has bare  
gravel banks.

Tashiro-Iko - Azusa R.

Astilbe

Aralia cordata

Eupatorium verticillatum.

Hirayu Pass

1684 m.

Lyc. clav.



nos. checked

58

1966 Japan

labels typed

Sept. 5 - Azusa River valley  
above Kamibochi

on loose gravel soil  
in predominantly conifer forest.

48082

Eupatorium

✓ 2

common near trail

✓ 2 83

Eupatorium

common locally near trail

✓ 2 84

Cercidiphyllum

occasional tree in forest

✓ 3 85

Lycopodium purpurascens

abundant, forming  
a continuous layer

✓ 1 86

very local on cut bank along trail

✓ 2 87

Aster

locally common along trail  
this plant on bare gravel  
cut bank.

✓ 2 88

Ribes

occasional

✓ 1 w. MHS 89

Aconitum

rare

✓ 1

Sept. 6 - Kamibochi. in  
Azusa River Valley

✓ 2 w. MHS 90

Botrychium multifidum

in semi-open forest in  
grass

✓ 1 91 (comp.)

in semi-open forest in grass

✓ 3 92

Polygonatum

in semi-open forest in grass

✓ 1

Honshu - Nagano Pref. 59

1550m

erect herb 1 - 1.9 m. tall.

erect herb 1 - 1.5 m. tall.

tree 8 m. tall, ~~sterile~~.

only one tiny patch seen  
fertile.

rays ~~from~~ light violet,  
disk turning reddish

depressed shrub; fruit  
solitary, fleshy, scarlet,  
flowers violet.

stems slightly bronzed,  
ground green, horizontal.



Sept. 6 - slopes of Mt Norikura

The general vegetation here is a mat of *Pinus pumila*, with prostrate stems, up to 6-7 cm diam. and short ascending branches, the whole from 0.5 to 1.5 m deep. very dense. On ground is a sparse to dense layer of *Shortia*, *Rubus*, *Vaccinium*, *Vitis idaea*, *Gaultheria* etc. Thick mat layer.

In slightly open spots mats of *Empetrum*?

On the abundant rock slides and talus are various other plants.

Where not actively sliding there is a heath of *Empetrum*, *Dryas*?, *Lolodago*, *Arnica*, *Deschampsia*, *Shortia*, *Rhododendron*, *Cassiope*, *Loiseleuria*, *Geum*, *Gentiana*, etc. Mat layer.

*Troutvetteria* locally on boulder talus.

Problem in heath is erosion from places where peat and sod are broken. Not certain if all the badly eroded spots are of this sort or not.

photos

1100 m

Sept. 7 - ~~Hokata~~ <sup>Hotaka</sup> Hotel

In deep canyon. walls very steep, covered by a mosaic of coniferous and broadleaf forest, mostly beech. Spectacular cliffs.

*Asculus*

*Acer*

*Quercus*

*Lilium*

*Magnolia*

*Cercidiphyllum*

*Aralia*

Hotaka to Takayama by bus.

photo

Pakara Bridge

below - looking up v. showing broad broken rock-river bed.

Tall plant, habit of *Prenanthes* is *Macaya* (Papav.)

Takayama City. lunch in a family mansion converted to a restaurant. Also is a family museum.

Takayama to Gifu by train -  
Lv. Takayama 2:30 p.m.

Valley bottom flat - perhaps 1 km wide, planted to rice between houses. Levees with rows of soy beans. Valley narrows rapidly. Some gardens with egg plants, tomatoes, cucumbers, cabbages, Chinese cabbage.



nos. checked 1966 Japan

62

Labels typed

Sept. 6 - Azusa River below  
Tashiro-ike

48093

*Melampyrum*

along road in gravelly soil

x1

Sept. 6 Hirayu Pass

x1

94

*Lycopodium clavatum*  
on road cut

Sept. 6 - Mt. Norikura  
upper slopes, mixed  
heath and *Pinus pumila* scrub

x1

95

*Campanula*

occasional, mostly on mineral soil

x1

96

*Rubus*

common at edges of scrub

x2

97

*Shortia*

very common generally

x3

98

*Rhododendron*

common on heath slopes

x2

99

*Transectaria*

very local on ~~rock~~ boulder <sup>cl</sup>

x1

100

*Vaccinium vitis-idaea*

abundant generally

x2

01

*Dryas*

common in heath

x1

02

*Empetrum*

very common in heath

x2

03

*Cassiope lycopodioides*

local in heath

x1

04

*Geum*

general on heathy slopes

Nagano Pref. - Gifu Pr. 63

fls. rose-purple.

1580 m

2800 m

Gifu Pref.

flowers deep blue.

dwarf shrub, spreading;  
fruits erect.  
flowers white.

flower white, but  
almost all plants seen sterile.  
prostrate, forming  
mats; scapes erect;  
tails rose-color.  
forming mats, mostly  
sterile.  
fruits reddish.

petals yellow, orange in  
center, falling very readily.



nos checked

64

Labels typed

48105

1

1966 Japan

*Loiseleuria procumbens?*  
on heathy boulder at  
edge of pine scrub

Gifu Pref.

65

prostrate, forming  
loose mat.



(from p. 61) RR follows narrow canyon at head of valley between steep hills with mixed forest.

Widens somewhat, again more rice. Small terraces.

Hills on sides cleared in patches, replanted to forest.

RR makes a loop in wide part of valley, goes off to left through a small side canyon, climbing rapidly, then through a long tunnel, still climbing. Out into a canyon which goes down between hills planted to pines + other conifers, rice in its flat bottom. Widens rapidly to a small lumbering town - Kuguno.

Narrows again between wooded hills. River fair sized. Some small rice terraces on lowest slopes. Then still narrower. Bed very rocky. More small terraces.

Walls become steep and very rocky, still wooded. Then lower, still steep.

Flat valley floor becomes incised. Great walls below ~~terraces~~ benches partly covered by bamboo.

Hidaosaka. - 2 tributary canyons enter here, one from each side. Reservoir below.

Benches on one side or other quite wide. Then they become sloping, terraced.

Forest planting on steep side, planted in vertical rows.

Joro

Hida-Ogiwara valley much wider, benches sloping. Rice.

Gero - small city. Mixture of old and new architecture.

Valley becomes a narrow canyon - many tunnels on rr. Steep wooded sides. Rice in wider spots.

Long winding reservoir. Then narrow rocky canyon bottom. Then incised flat bottom, much bamboo.

Another reservoir.

Hidakanayama

Canyon with narrow rocky bottom.

Rather wide valley again, with several benches.

Tunnel.

Shirakawaguchi.



Valley greatly widens out.  
Deeply incised flat bottom.  
Bamboo on cliffs. Hills lower,  
slopes more moderate. Rice.  
Shimōtaso

Valley broadens very  
much, into a cultivated  
plain. Winding river course  
somewhat incised into it,  
dammed to form a reservoir.  
Mostly in rice, but  
morus abundant, gardens  
also.

Lower main terrace level,  
perhaps 2-3 m down.

Mino-Ota.

River goes out of this plain  
through a narrow canyon  
with rocky wall on one  
side, wooded slope  
on other, narrow flat bottom.  
Widens somewhat.

Then emerges in a wide  
plain again.

Unuma

Some isolated hills in the  
plain. Rice with patches  
of morus.

Arr. Gifu 5:45

Sept. 8

Left Gifu for Nagoya by bus, 10:00 a.m.

Paper lantern factory, Gifu.

Papers used are mixtures of  
Kozo

& Mitsumata

different weights and qualities  
due to different mixtures  
and details of processing.

Delta of Nagara R. seems  
very much built up, appears  
to be one great industrial  
city. (Ichinomiya) Remnants in rice  
cultivation, gardens around  
houses. Much taro and  
sweet potatoes, mus. eggplant,  
sesame, cabbage, parsley,  
"shiso"

Whotos  
hot.

Nagoya castle, with  
Nelumbo & Hydrocharis  
abundant in moat.

Homalanthus common as  
street tree.

Left Nagoya for Kyoto 3:15, via  
Lake Biwa.

Large flat rice area.

Some distance from Nagoya is  
an area of truck farming.

Bet. Nagara R. & one west of it (Ibi R.)  
an area of truck farming and  
morus. W of Ibi R. mostly rice  
no soy beans on levees.

Climbing through low



pass between Niagara delta  
and Lake Biwa. Hills wooded.  
Attractive traditional architecture.  
Terraced rice in bottom of valley.  
Much Cryptomeria in forest, but  
many other trees too. Pines.  
Tunnel. Very beautiful low but  
rugged wooded hills with narrow  
rice areas between them.  
Considerable bamboo.

Ieri R. valley - very wide.  
Rice harvest has just started.  
Highway lies well away from  
lake at foot of hills. Hills are  
wooded. Patches cleared. Forests  
here largely pine.

Wide cultivated plain.  
Echi River, wide gravelly  
channel.

Patches of pine plantation.  
Then large area of rice.

Then low pine-covered hills.  
Then rice. Then more  
low pine-covered hills. Then  
hills that have scrub and  
thickets, taller woods in ravines.  
Then more pine.

For a considerable distance the  
landscape is pine-covered  
hills with occasional ravine  
with flat bottoms and rice  
terraces. Rice here is very young.  
~~Before~~ small city on  
it. on plain, hills on left.

Seta River  
Otsu City; Kyoto

Sept. 10 air trip, ~~Kyoto~~ Osaka-Fukuoka  
cloudy. practically no  
visibility.  
Delay in Fukuoka 7 1/2 hours.

A bit out of Fukuoka, to  
it. is a crescent shaped  
island, not very high,  
looks like an old cone,  
much worn down,  
convex side in direction of  
course. Dry, at least partly grass,  
not seen very well.



Sept. 11 - flight from Seoul to DMZ and along it. in small 4-man cabin plane. (sitting on rt. middle seat.)

The sky is overcast but horizontal visibility good to south, less to north.

To fly north to Han R. estuary then n. e. generally along Imjin river, but sl. to north of it.

Some cultivation, in accessible areas, even in DMZ. Mine fields, both recent and left from Korean War, these unmarked are found generally.

maps - AMS 1/100,000 DMZ sheets 1+2 series L652 Ed. 1 - AMS (FE)

40m + 20m contour int. with purple overprint showing DMZ + various aviation information.

Take-off 10:03 a.m.

W of Han R. flat land is solid rice cult. gentler slopes of hills other cult. steeper slopes and summits thin scrub, some grass showing through, some red bare ground.

Villages mostly on lowest hill slopes.

E. of Han R. same. Many hills protruding through

blanket of alluvium. Soil of these apparently sterile, steeper ones badly eroded, thin to thick tree growth, thickest in ravines and on certain slopes - no apparent pattern. Erosion very bad on many hills, some others apparently similar, well wooded. Crossed Koryung R.

More hills with strips of alluvial rice land between them.

Cultivation in places on bases, villages also.

Mon fan ~~ch~~ on stream + another joining it.

Hills much higher, more grassy, some thickets. Munsan to left.

Considerable erosion.

Small river.

Hills becoming higher. Imjin River, e. of large island. Island sandy + obviously washed by floods. Hills along Imjin greener and with less obvious erosion. Hills west of Imjin much more forested.

Clouds thick to n. e.

Plane turned back, but on course well to east of Han R.



Hills here are much higher, with less rice land between, and to right of course still higher and more wooded. Less rice and almost no other cult. Few villages. Following generally the direction of Han R. but 5 mi or more to east.

Some hills very well forested, others obviously cleared, somewhat grassy or scrubby.

Turned somewhat east. Some very ragged mts. in distance to it.

Large valley, mostly rice and very low hills, to left. Some extremely bare eroded hills on left. Uijong-bu to right. Cross Valley of Han-ch'on R. Many small hills,

badly eroded. Rice between mts. here, ~~at~~ east of valley, are extremely bare and eroded. Scrub on lower sides of ravines, ridges bare eroded rock, a few sparse bushes.

Valley of Pochon-ch'on

Hills now partly wooded only slightly and locally

erodes. east mts. to ~~west~~ of this, well wooded, on upper slopes, denuded and ridges badly eroded lower down. Trails obvious up to about 2/3 of way to summit. Scattered clearings flying n.e. some higher mts.

Wang-suk-Ch'on Valley mts. n.e. side wooded but with many clearings, even to summit. Most clearings planted, some in regrowth. Lower slopes mostly cleared. Still going east.

Hang-jing-Ch'on River Many installations considerable rice and other cult. this on lowest slopes. Riverbed wide and gravelly.

East of this hills mostly denuded or with ~~some~~ patches of woods & thickets.

Clearings mostly cultivated, some grassy. Even to tops of mts. Han R? Pulshan-jang Valley rather narrow, steep walls. Intricate system of tributaries. Large one joins



where we reach it.

We turn back along this tributary. Hills + mosaic of cultivation and wood, even on steep slopes. Erosion does not seem so aggravated here. Flying across large loop in river. Dams below on left. Small areas of terraced rice in flatter areas of mountain stream. Most stream beds very steep + rocky. Pubhan R. on left. Mts. on right, perhaps 25-40% wooded in regrowth. More wooded as we progress, but some wide terraced valleys. Lower slopes clear, cult. or fallow.

Returning to Kimpo. Middle slopes with sparse forest + scrub. Upper wooded. Paths along many ridges. Many small round spot clearing with little vegetation but with something, perhaps a rock pile or haystack in middle. No - these are graves.

Back into broad valley again with extremely eroded hills. Large river, with islands on left then entering narrow steep sided

canyon. Much rice and some other cult. in wide part. Main highway. Cemetery on upper slopes of hill.

Very rocky mts. <sup>-Walker Hill</sup> just east of Seoul. Bedrock gray, apparently metamorphic, sparse scrub, esp. in ravine. Seoul on it.

Wide valley of Han on left.

Following Han R. Much sand exposed in parts, some large <sup>exposed</sup> areas. Several wooded hills in city. But enormous area with buildings crowded so no space shows between them.

New Bridge. Industrial area on left.

Forest on hills s. of Kimpo mostly open scrub forest.

Reached Kimpo at 11:05, landed at 11:07.

Large wet plain, still semi-inundated from flood, north of air strip. Mostly a vast rice field. Some areas seem not to have rice, but to have some sort of cultivation pattern. Possibly harvested rice - very muddy now.



Dr. Hong says that the wooded areas at the east part of our flight are protected from fire by govt. while those in middle valley that were so badly eroded are burned frequently by farmers. He says, also, that in the ROK-controlled part of DMZ fires are set, both by ROK and Communists, depending on direction of wind, to damage other installations and flush out infiltrators. This is not done in US-controlled sector.

East coastal area warmed by currents.

Forest in mountain area in north, near DMZ, said to be largely *Quercus* & *Prunus*, farther south and west, largely *Pinus densiflora*.

Most of hills are granite, but some sedimentary incl. limestone, on east side.

Sept. 12 - Left Seoul 8:50 a.m. for DMZ Hills with sparse scrubby pine forest. This gradually increases in stature as we go north and hills get larger, also becomes more & more dense. In places closed forest, always dominantly pine, but with some oak, *Prunus*, etc. Lombardy poplar common around rice fields, often pollarded.

Cult. rice  
sorghum  
sweet potato  
soy bean  
squash  
mango  
radishes  
sesame  
chinese cabbage  
bean  
onions  
millet  
~~rice~~ buck wheat  
cassia  
tamarind  
Peanut?



Munsan

Hills bet. Munsan and Imjin R. are low, badly eroded covered by an open ~~forest~~ scrub of small pine. Much rice in bottom-land of river.

Bluffs on other side very well wooded. Forest closed, mainly broadleaved.

South of bridge many dead trees.

Freedom Bridge - Tokkai

Just north of it, a marsh being invaded by trees.

Phragmites locally dominant. Probably an old rice field.

Topo sheet Kaesong SE

Korea 1/25,000 sheet 6527 IV SE

Imjin River just above Freedom Bridge, Tokkai

Old rice field along Imjin R. flooded land - Phragmites dominant.

~~Scrub~~ *Fernulus* abundant.

Some invasion by *Robinia*, *Setaria* spp., *Echinochloa*, *Polygonum*.

Low hills - thickets of *Robinia* and scrubby oaks of several kinds, several other small tree species.

Old rice fields above level of river, dominated by

Phragmites, invaded by *Salix* sp.

~~443~~ Observation Post Maizic -

Top of a hill covered by a closed scrub 3-4 m tall of several oaks, chestnut, *Lespedeza*, *Pinus*.

*Polygonum* spp. with oaks in water

Across toward DMZ are large open areas, partly in a bright green grass, partly in Phragmites, scarcely invaded by trees. Several hedgerows of trees crossing it. Semi-open lower slopes with open scrub, patches of thicket. Very low hills scattered in the open plain are mostly covered by ~~open~~ scrub forest, possibly oak (leaves glaucous).

Mountains in distance on NK side very ragged. Numerous small fires and one or two large ones to be seen on NK side.

3 ~~to~~ white herons seen flying north toward DMZ.

*Robinia* abundant on lower slopes, invading open areas, forming thickets.



Labels  
typed

Sept. 12 - north side of Injin  
River, just above Freedom Bridge,  
Tokpae

around military installations

48106

*Lespedeza*  
persisting

x4

x4

07

*Eragrostis*

occasional on grassy slopes

x2

08

*Digitaria*

on stone wall

x4

09

*Digitaria*

on steep grassy bank

same - on flood plain of river,  
probably formerly rice fields.

x4

10

*Setaria*

locally common

x4

11

*Setaria*

common

~~*Digitaria*~~  
~~occasional~~

x4

12

*Humulus*

abundant

x4

13

*Equisetum arvense*

very common, recently  
inundated.

same - on low hills  
along old road in thickets

x1

14

*Digitaria*

occasional

shrub 2.5 m. tall, branchlets  
drooping, many from near  
top of stem; flowers magenta.  
tufted, culms erect.

racemes drooping, <sup>bristles</sup> green.

racemes erect, bristles yellow.

Twining, tangled with  
other vegetation, pollen  
~~sheds~~ produced in clouds  
when plant is shaken.



nos. checked 1966 Korea

84  
Labels typed

48115

X 5

*Lespedeza*  
common

X 4

16

*Xanthium*  
occasional

X 5

17

*Plantago*  
common in road

X 1

18

*Lernum sibiricus* L.  
occasional

X 2

19

*Polygonum*  
occasional

X 1

20

*Lactuca*  
rare

X 4

21

*Echinochloa*  
common

X 3

22

*Pottboellia*  
occasional

X 5

23

*Quercus*  
occasional

X 5

24

*Elaeagnus*  
occasional

X 2

25

*Aster*  
occasional

X 4

26

*Polygonum*  
common on bare soil

X 2

27

(legum.)  
occasional

Sept. 12 - Observation Post Major  
hill just n.w. of end of  
Freedom Bridge, n of Imjin R.  
tall scrub on hilltop

X 1

28

*Eupatorium*  
occasional in edges of

X 1

29

*Campanula*  
rare in

85

shrub 1.5 m. tall; flowers  
magenta purple.  
erect

erect; flowers purple.

flowers pinkish white.

flowers dull yellow.

ascending.

tree 5 m. tall.

shrub 3 m. tall

rays white, disk yellow.

erect; flowers pinkish  
white.

flowers blue.

heads pinkish white.

flowers bright blue-violet



nos. checked 1968 Korea

86  
Labels typed

48130

Quercus

X3

occasional in scrub

same in valley floor,  
in marsh, <sup>possibly</sup> former  
rice field.

X3

31

Zizania

dominant in standing water

X3

32

Phragmites

common locally

X3

33

Phragmites

abundant locally

X7

34

Polygonum perfoliatum

common

Sept.

Oct. 13 - ~~Libby Bridge~~, south  
bank of Injin River at  
Libby Bridge.

on edge of cliff formed by  
an old basalt flow

X2

35

Artemisia

common

X2

36

Artemisia

common

X7

37

Polygonum

common

X1

38

Lespedeza

rare

X3

39

Cassia

common

X3

40

Lespedeza

common

87

shrub 2 m. tall.

canes 3 m. tall; infl purple.

canes 2 m. tall; infl. purplish.

much branched scrambling  
herb, flowers greenish  
white, fruiting calyx  
blue, fleshy.

plant green

erect, spikes nodding,  
flowers dull pink.

erect, flowers purplish  
white.

leaves closing in darkness

stems ascending to erect

(to p. 92)



Sept. 13 - trip by truck from Tokkae to Libby Bridge

Low hills with flat rather narrow to wide alluvial valleys between them. The hills are covered by open to closed scrub forest and thickets. The openings are densely covered by a tangle of grass, shrubs and vines (*Pueraria*, <sup>vicia</sup> etc.)

The alluvial flats are covered by deep mats of *Miscanthus* and other grasses, various herbs, with invasion of *Robinia*, *Salix*, etc. Low wet spots are covered by *Phragmites*.

Libby Bridge - south bank of Imjin R. is a low vertical cliff formed by a basalt flow which extends for a mile or 2 along river, apparently forming the wide plain on the ~~the~~ side of river. Cut in places by ravines.

Quite a different set of grasses, at least, here on edges of cliff.

*Themeda*, *Pennisetum*  
*Eragrostis*

Observation Point Dori - a hill just n. of Imjin R. with a rather winding valley just north, below it.

The valley is grassy, with much willow invasion, esp. along the stream.

Hills have scrub forest, but many burned patches - said to date from war.

Obviously not new, but most of trees dead.

Ridges tend to be eroded, but may be because the ribbon marking edge of buffer strip is along these.

The ROK controlled area starts just east of here and the vegetation on the hills is far more sparse, erosion more general.

Barriers of sapling fence, with clear strip south of them extend continuously east.

The road east winds through low mts. These vary from covered with scrub forest to open scrub to a low mixture of grass, vines & shrubs.

No particular pattern except that the worst denudation is near the largest cult. areas.



Around ROK camp the hills are scrub-covered, but the scrub is locally sparse and the ground is bare and eroding.

Lower slopes, where they were cultivated, are mostly covered by *Miscanthus*, with some invasion by *Lythrum*.

Alluvial flats some still in rice, with some *Phragmites*, some seem to be still ~~in~~ <sup>used for</sup>, some growing up to *Miscanthus* + *Phragmites*.

Returning along valley running about due south to Seoul, the hills have essentially no forest left. In the northern half of this route they are blanketed by a mixture of grass, vines and low shrubs. Southward they become barren and eroded, with sparse or open pine scrub, 1-4 or 5 m. tall. The treelets are all flat topped. Usually little or no grass.

A general horticultural practice in central Korea is the planting of *Cucurbita* and *Lagenaria* around houses and training them up over the thatched roofs.

*Perilla* sp.



nos. checked

92

1966

Korea

Labels typed

(ctd. from p. 87)

48141

*Thermopsis*

X4

common

X1

42

*Silene*

rare

X1

43

*Triglochin*

rare

93

stems arching, ascending  
or erect.

erect; petals very small,  
white.



Sept. 14 - helicopter flight.  
~~Helicopter~~ ~~to~~ Seoul, to Solwŏn-ni.

left ~~Seoul~~ 9:30

along Han River - wide sand flats exposed, ~~no~~ veg. Flood plain on rt. in rice and truck crops.

low small sparsely wooded hills, mostly with trees planted in rows, some grass. Rice and other cult. on left bank, too, but hills densely wooded, more land in houses, etc. Mts. on left, except hill nearest river (Walker Hill) eroded to bedrock. Hill near river covered by pine woods.

Plains of Han V. mostly in rice. Hills thinly wooded or with thin scrub. Many graves.

Left Han R. to follow a tributary to left. Valley flows in rice. Gardens on lowest slopes. Upper slopes vary from closed forest to bare eroded ridges or ridges with open woods. Mt. on rt. is forested to top, as are all higher ones on both sides as we proceed.

Follow valley bet. rather high peaks. There become

rather less wooded as we go along. To open scrub forest with sparse patches, these with bare ground - otherwise ground is green.

Rejoin Han R.

Small valley bottoms in rice, higher ones buckwheat. Hills with open scrub forest varying to sparse and to dense forest on higher slopes. Some clearings high up, some of these in grass, a few in buckwheat.

Clearings become more abundant.

Large dam across Han, we follow tributary to left.

Hills partly denuded, in patches, esp. on left.

Rice in valley bottom. Patches of good dense forest, alternating with clearings, on left. On rt. mostly open to sparse scrub forest and scrub. A few patches of closed forest high up.

Then denser forest on rt. and mostly clear on left, varying to open, then closed, scrub forest. Then more scrubby on rt.



and generally. Bare ground on ridges on left dense to sparse scrub forest in ravines. Better forest on it.

Rejoice Han R.

Kaipyong River - dammed to form reservoir. Hills steep, with dense to open forest, rice in bottoms. A few clearings, then was cultivation on very steep slopes, kind not determined except occasional buckwheat patches.

Climbing over high mt. divide Mts with dense forest, many clearings. Some of them buckwheat. One mt. on left almost all cleared.

Then a large river valley with wide flat bottom much up land.

Chuncheon city in this valley. Low hills denuded to scrubby. Mts ~~are~~ wooded to tops. few small clearings high up, some cult. on lowest slopes, some terracing.

Hills on left mostly scrub covered, with open forest on it. denser forest, then denser forest on left on higher slopes.

considerable clearing on left, less on it. Valley is narrow here. Wooded mts on both sides with some clearings. Apparently crossing from one meander to another of valley. Steep slopes, forested with considerable clearing. Flat or terraced side valley bottoms in rice. Quite rugged country. Some clearings in scrubby regrowth.

Turned off to it up smaller valley. Rugged densely wooded country with some clearing & buckwheat patches, now on lower slopes.

Climbing over divide. On other side same pattern, but some clearing even to tops of mts.

Came to a medium sized deep valley, with very meandering, with stream dammed. Merely cut across end of one loop.

Then another such valley with stream running to left, possibly meander of same one. Hills still mts



densely forested, locally cleared. Lower slopes around a big military establishment considerably eroded.

Following up this valley, lower hills & slopes with scrub & scattered trees, badly eroded. More installations. Higher mts forested with, on left, much clearing. Mts almost denuded, but except lowest slopes, still green. Small towns. Mts on rt. forested, those on left grass or thin scrub. More clearing on lower slope to right, higher ones still forested. High mts in distance on left wooded, but close ones in scrub. Rice in valley bottom.

Town.

Crossed low divide to another meandering river valley. Then across a meander. Follow up this valley. Nearest mts. in grass, sparse scrub, cult. farther & higher ones forested. Lowest slopes terraced and in rice, next higher ones in misc. cult., even steep

ones, higher ones in sparse scrub and grass.

Mts. generally more denuded, on left little forest in sight, that sparse, on rt. highest slopes still forested, at least in part.

Circled around in a wide place and going down to small air strip. Landed at 10:35 Bohwa. riv.

Foryang R.

Jeep ~~from~~ to "Punchbowl" - crossed divide, *Pinus densiflora* forest below, along road a poor scrub.

Bottom of Punchbowl is in rice, millet, maize, perilla, Chinese cabbage, soybeans, ~~bush~~ Lower slopes scrubby, all around, higher forested.

Roads on and near top ridges on DMZ side.

Barrier cuts across north edge, down near base.

Another road up to top of ridge on west side - study area is there. Taem-san Mt.

Low hills in Punchbowl are grassy - semi-scrubby.

Study







Return flight - started just south of west. over very rugged forested mts. Some lower slopes cleared, much rice terracing in valleys.

A road winding through mts. much clearing along it.

Valleys leading into large reservoir on upper Pukhan R. Villages.

Hills Mts around reservoir rather denuded. Large rice area ~~below~~<sup>above</sup> reservoir. Considerable erosion on sides of valley above reservoir, esp. on east side.

Crossed ~~sp~~ divide into another valley. Mts. less denuded, but large slope burned.

Then into a smaller valley. Prob. tributary of last. Some terracing & clearing.

Heading s.w. directly across country avoiding highest mts. Clearing & graves almost to top.

Large river valley, apparently dammed with road. Follow this

Then cross to another very wide flat valley, vast areas of cultivation big river. Large city on east side of river.

Chuncheon.

Hills here with open forest and scrub. Some erosion. Wide bare flat, apparently denuded by recent floods.

Cut across hills going s of w. <sup>almost</sup> some densely forested, some cleared. Very steep clearings are farmed.

Many ranges, forested, some clearings.

Large river on left - ~~prob~~ dammed, forming an elongate reservoir. R.R. along left bank as we go down it. River curves south, s.w. crosses at curve.

Another river joins. We follow r. through small valley, then across hills, and along paved highway. Forested hills on both sides of valley, some clearing.

Flying s.w.

Some erosion scars on mts. Much clearing.



Follow fairly large river. Join very large on just below dam. Must be Pukhian. Follow it. Mts rather scrubby, but some fair closed forest.

Cross large tributary from w. or n.w. High densely wooded mts on it. River in distance on left.

Crossing hills. Forest, grave, clearings. Large valley on left.

Mts now with large scrub. Thicket, cultivation. Rice in bottoms.

Came out over s. end of a tunnel into large valley, with rice cult. Paved highway, turning from w. to s.w.

Chulad mt. on left. Yehong ham on left, well wooded. Hills become lower. Han R. ahead. Hills eroded.

Extensive rice land.

Much flood damage apparent. Sandy flats in river bed. Much garden land. Walther hill ahead.

Landed 5:55

Sept. 16 - Flight from Kimpo to Mt. north to DMZ and back along south "no-fly" line 1000 m s. of DMZ.

Left Kimpo at 10:05 a.m.

A number of white herons in flooded fields near end of strip.

Photo

Photo. View of village in rice field n. of Seoul.

Hills sparsely wooded, in ravines more densely so. Locally an intricate terracing which may be tea plantations.

Following Changnung chon.

Mts. on it. very rocky, not well wooded except in higher ravines.

Crossing to Kyongwon - son valley, over wooded mts with scattered erosion scars and bare rock aiguilles along main ridges.

Kyongwon side much less wooded - sparse to open scrub.

Mts across valley also rather bare.

Wijongbu on left.

Flying n.e. over moderate hills, mostly rather bare, then more wooded but still ridges bare.

Photo

Photo. View of village here.



Grassy low mts with  
rice between them. Then  
a very well wooded mt.  
Then a small valley  
running s. follow the  
n or n.w. many graves on  
open-wooded hills. Wood  
very scrubby.

Then a complex of wooded  
mts. - Chugyopsan? some  
cleared areas.

Then a larger n-s. valley.  
Hills rather denuded, green  
with sparse scrub or forest.

Follow a small n.e. valley  
between partly wooded  
hills. Over a high ridge,  
well wooded near top,  
with some clearings, mostly  
cleared near base. a  
ridge-top trail

Well wooded peak  
(we are east of where I thought)

Chong-ch'on valley above it.

Pukhan-gang well to right.  
High partly wooded mts.  
cleared on e. slopes.

Lower mts. Then Pukhan  
Chuncheon to it.

Flying along Boyang-gang.  
Partly wooded, partly cleared  
mts to it.

Pumanini to it. loop in river.  
then high predominantly

wooded mts. to it.

Isangsu + valley to it.

rice in bottoms of all of  
these valleys, clearings  
on lower slopes, few in  
high parts. Well wooded  
mts. Mostly broadleaf,  
but conifers on ridges.

Big reservoir in far  
distance to it.

General pattern here  
valleys + lower slopes  
cleared, ~~and~~ ridges  
and high slopes wooded.  
Loop of Boyang-gang.

Air strip.

Fairly well wooded mts.

Rice on left.

Largely cleared ~~bits~~ <sup>and</sup> then  
wooded ones on it.

S. of Puk-ch'on valley, as  
well forested mts.

Forest mostly broadleaf  
but patches of pine.

Considerable clearing on  
high gentle slopes.

More and more pine forest

Much clearing, even  
fairly high up. A burned  
area to left.

Intricately dissected low  
mts. wooded on ridges

Then a high, forested  
range. Spectacular cliffs



to left. Rocky ridges leading to Lorak on left. Wooded gentler peak on it, and much wooded country.

Lorak on it. Has a small patch of low veg. on top. Forest on slopes. Rock cliffs. Sea ahead.

No clearings very high on Lorak, but lower ridges almost completely denuded. Lower hills bare and eroding.

Spectacular rock ridges north from Lorak.

Sobek's on it. with lagoons.

Hills bare. Rice land between.

Many villages along shore, also back from it.

Denudation of low hill fairly general along coast, less severe northward.

Coastal lagoon. Then more severe denudation.

Turning inland toward DMZ. at Chasan-ch'on valley.

Hills slowly become less bare, but still abundant white spots.

Left Chasan-ch'on at Nommung-ni.

High wooded ridges.

Forest very low, dense, &

smooth on ridges, bigger in ravine, esp. on n. slopes.

Road and posts on top of this ridge.

Good broad-leaf forest on these mts.

Road along ~~1st~~ <sup>2nd</sup> valley back from DMZ. Poor forest on mts n. of it.

1st valley mostly clear but not farmed.

Punch bowl

Much burned area on east side.

Ridges to s. w. very well forested except tops.

Ridges & valleys to s. very badly torn up by roads & other military activities.

These mts. are not well forested - locally open forest, locally loose scrub.

Crossed fair-sized river. (Jack or wolf).

Communist side equally or more scarred.

Marines has wide clear area on both sides.

Some burned areas on south side of Pukhan R.

Mts. with rather scrubby forest, but few obvious clearings. Some old ones.

photos  
sent.



photos  
not

High peaks all with  
observation posts on them.  
Much cleared area along  
roads.

Poor open forest, burning  
has been common.

photos  
of barrier  
not.

Large valley - ~~Chang-ni~~  
much rice on s. side,  
gardens even on n. side  
of barrier.

Much larger valley  
Nanduk-ch'on.

Hills n. of this rather  
denuded on lower slopes,  
almost no forest even  
on higher parts, what  
there is quite open.

Then great flat valley.  
rivers incised in lava  
flows. Rice land. Denuded  
hills. Mts. to west green  
but little or no forest.

Turned south along  
Hansin-ch'on v. River  
cut in lava flow or  
bedrock.

West across Chan-gum-ch'on  
Bare rocky mts, only  
scattered trees on dark  
gray rock. Gentle slopes  
green. Locally open forest.  
Small river.

Then Imjin R.

Following it, crossing great

meanders.

photos  
not.

Hilly country with rice  
between hills. Some scrub  
but no forest on hills.

Shots are graves.

Little cultivation on hills  
except lowest slopes.

photos  
not.

More and more erosion  
on ridges.

Hansin-ch'on valley enters  
Imjin. Basalt flow cliffs  
locally on Imjin. Both sides.

Libby Bridge.

photos  
not.

U.S. section - hills  
much more wooded  
much scarred up, but  
woods closed.

Turned south just  
before Freedom Bridge.

Imjin estuary

Hills n. of this rather denuded,  
sparse to open scrub.

Higher ones with more  
continuous scrub.

photos

Photos showing tendency to put  
villages on lowest slopes, not  
on rice land.

Phragmites on some temporary  
islands in small estuary  
across Han from Kimpo.

Landed at Seoul (K-16) at 12:20.

*Cosmos bipinnata* abundant  
ornamental generally,  
planted even along roadsides  
in Korea.



Sept. 17 - Left Seoul for Fukuoka  
via Cathay Pacific. 4:15 p.m.  
Electra, left side.

First mountain range is  
eroded to bedrock, little  
vegetation.

South of this is extensive  
country of small hills  
and rice fields. Hills  
are mostly somewhat  
eroded, some seriously  
so

after 10 min. crossed a fairly  
large very muddy river.  
Same pattern of a network  
of alluvial strips with  
rice and hills sticking  
up between them, is very  
extensive.

At about 13 min. a  
~~small~~ range of small  
mts. fairly extensive  
but not high. Rice in  
valleys.

More rice with small eroded  
hills.

Considerable area of small  
densely wooded or brushy  
mts. Lower slopes badly  
eroded locally

22 min. Fair sized valley  
system

Flying parallel to a  
large sandy river, on left.  
Visibility poor  
At 24 min. river turns west  
and crosses course.

Country of eroded mts,  
with rice between them.  
Visibility now.



Sept. 18 - Fukuoka

*Solidago altissima*, introduced after World War II, is very abundant in waste places, grows to 3, or even 3.5 m. tall.

Sept. 23 - trip by train, Fukuoka to 10:42 a.m.

Hills in city covered by low mixed broad-leaf thicket or scrub forest. *Pasa* or *Arundinaceae* in openings.

Rice land, s. of Nishijin, being encroached upon by apt. buildings and other housing.

Meinohama area - coal mining underground causes settling of surface, gradually, which then becomes marshy.

Some black pine forest, formerly University forest dept. land, now, belongs to city. It is along seashore, on sand flats. Much disturbed.

Pine also on low hills, but also badly cut up, by excavation, etc. even though the area is a second-class national park. Majuku Station. (Imajuku?)

Rice land, wooded Mts. inland. Susenji. - Terraced rice, & Mts. with thickets & forest slightly inland. Area becomes wider. Several hills <sup>ahead</sup> seaward that

Look like old volcanic cones. Hatae Sta.

Maebaru - hills approach, Rd. on inland side. Thickets with bamboos, etc. on slopes.

*Castanopsis cuspidata* dominant in this broadleaf evergreen forest. Kafuri area. The small cone seaward called Kafuri-Fuji. Kafuri Sta.

Small hills inland, close to m. with terraced rice and bottom-land rice between.

Then hills on both sides. Ikisan Sta.

A large level rice area, with high mts. (900 m) just back of it. Some lower slopes terraced. Slopes patchy with clearings, thicket, *Cryptomeria* plantation, etc. Fuka Sta.

Mts. approach sea. Strip of pine wood along back of beach just before the Mt. slopes reach the sea. Here shore is rocky, few pines.

Small tunnels. Bits of rice back of beach in small valleys. Dainger Sta.

Pine on beach ridge. Rice behind. Continues some distance, beach ridge ~~from~~ changes to dune area covered by pine.



In some places dunes cleared and terraced.

Fukuyoshi Sta.

Wider area behind beach ridge and village. Much disturbed pine wood, no dunes.

Coastal strip then narrows to almost nothing. Rocky shore. Small headlands. Thickets, grass & kudzu.

Beautiful small valleys with rice. Thickets and bamboos on steep slopes.

Shikaka Sta.

Rocky steep coast. A few pines.

This for some distance. Then a small river and a broad valley with rice.

Arr. Hamasaki 11:55.

Nijino Matsubara <sup>Pinery</sup> reserve, under Ministry of Agriculture. Purpose to protect from strong winds, etc.

Collecting of plants & animals prohibited, also driving cars, ~~and~~ camping, building fire or otherwise damaging forest. Trees prohibited.

This is an extensive tract of *Pinus thunbergii* on rolling sand plains back of beach. The distribution of large old

trees is very irregular, in places closed crown forest, in others very widely spaced. Trees to 20-30 m. tall, but extremely rare. Between these are several generations of smaller trees, more or less in patches. The ground beneath is mostly rather bare, with a hypnoid moss mixed with needles, occasional patches of one or more grasses, of shrubs such as *Elaeagnus*, *Rhus*, etc. Spreading or running *Vitex ovata*.

In openings taller grass, but more usually planted pine ~~see~~ saplings of several sizes. Natural seedling regeneration rare or absent. Plantings are in rows, about 1 m. or less apart. Where these have reached several m. ht. thinning is evident. Beach backed by two strips of dense pine planting, one next to forest, about 3 m. tall. Tips curled and damaged by something. Then a strip, a few m. w. about 1-1.5 m. tall & very dense. Then beach covered by irregular growth

27.6.86  
even fallen  
leaves and  
stems are  
protected.  
But cutting  
of forest  
pine beetle  
carried in.  
new trees  
planted for  
young forest  
protection.



of *Ischaemum* sp. with some *Wedelia* sp. Then a wide band of *Carex hobomugi* just back of beach proper.

In more distant area, somewhat back of beach, abundant natural seedling stands locally, mostly very small, a few 2-3 cm. one patch 1-1.5 m. very dense. Locally much *Lathyrus* sp. a few *Cymbidium* sp.

Bases of even small trees covered by moss.

Older ones have moss and *Polypodium thunbergii* esp. on top of leaning trunks. Lichens, mostly crustose, common on trunks of all size.

Various other species - *Leopedeum cuneata*, *Phyllanthus* sp. <sup>small</sup> shrubs as *Mallotus* sp. *Myrica rubra* (?) (rodon), *Cinnamomum camphora* <sup>celastrius</sup>, etc. locally common. Along roads and main paths various other things are established and invading forest.

This forest is criss-crossed with roads and trails.

Toward the south end the effects of wind are much more apparent. Most of trees, esp. the larger ones, are strongly leaning

landward. The stature is much lower, and stands more open.

In general the ratio of trunk diameter to height of these pines is unusually high, somewhat like what is often seen on high ridges.

Forest extends in a thin crescent-shaped strip from Hamasaki to Higashi-Karatsu, between the railway and the beach.

The soil is a fine grayish sand, the combination of needles, moss, & upper layers of sand very soft to walk on, also tunnelled with rodent burrows. The moss is a *Hypnum* like species.

Left Higashi-Karatsu at 2 a.m. on train for Fukuoka as the weather got more and more rainy.

Sept. 25 - Left Fukuoka 5:30 p.m., in rain. arr. Tokyo 7 p.m.



nos. checked 1966 Japan

120

Labels typed Sept. 22 - Fukuoka, Fukuoka Pref.  
Kyushu University Campus

48144 *Phyllanthus*  
s1 along path between buildings

Sept. 23 - Niji-no Matsubara  
Pinery s. of Hamazaki,  
in low forest of *Pinus thunbergii*

s1 45 *Parmelia*  
common on branches of trees

s2 46 *Polypodium thunbergianum*  
commonly epiphytic on trunks  
of *Pinus thunbergii*

s1 47 *Phyllanthus*  
very rare, one small patch  
seen

Kyushu

121

2-3 m.

plant arching



Sept. 30 - Molokai -

One day visit to lecture to Peace Corps volunteers being trained at several camps on the island. One camp is at Pukoo Fish Pond, another a mile or so east. Other groups are quartered at Hoolehuanā.

Little change is evident on ~~this~~ the part of Molokai between Hoolehuanā and Mapulehū since the 1930's. *Prosopis*, *Eugenia cuminii*, *Leucaena*, *Schinus* are generally common. *Thespesia*, *Thevetia*, *Pluchea indica*, *P. odorata*, and *Atriplex lentiformis* are locally common. The *Pluchea indica* reaches 2 m. tall.

A fire has burned over a large area of the first steep slopes east of Kaunakakai.

Around Pukoo Fish Pond *Paspalum distichum* is very common, forming a loose lumpy turf on sandy ground and in moist depressions.

Pineapple fields seem to have been extended somewhat.

Mauna Loa still has a few scattered trees, but from a distance not identifiable.

Oct. 1 - Flight to Hilo. -

Very cloudy.

Kanai - top surface of west end seems somewhat more vegetated than before, but still there is considerable bare red soil showing. The pineapple fields have been extended somewhat westward on the plateau toward Kaneohe.

West Maui completely covered by clouds except a bit of coastline. Haleakala, also, is completely covered.

Magnificent view of Kohala gulches. Mauna Kea - clearly vegetated to within a few hundred m. of the summit. Upper limit is irregular, the newer cones not vegetated.

All along the Hamakua coast the bagasse poured out of cane mills is floating in great masses on the surface of the sea.

Pandanus forest Puna direction from airport quite extensive - open.



Oct. 2 - Anahon Ranch  
pastures a mile or so  
below main ranch hq.

Scattered *Metrosideros*  
with an open scrub  
of *Dodonaea* and quava  
with <sup>thin</sup> grass between.

Scattered *Acacia*  
*confusa* and *Linociera*.

The *Linociera* about 3<sup>rd</sup> m  
tall, upper branches laxly  
branched, with lanceolate  
leaves, lower ones which  
are subject to browsing  
closely branched, twiggy,  
stiff, with short ovate lvs.

Adjacent pasture  
separated by fence with  
fewer *Lehua* trees, only  
a sparse low quava scrub.  
Dominantly grass.



Labels typed Oct. 2 - Road to Ainalou Ranch,  
just off Chain-of-Craters Rd.,  
Hawaii National Park

48148 *Scaevola hilauea* Desq.  
occasional, scattered in  
open *Metrosideros* forest

Oct. 2 - Ainalou Ranch  
in partially cleared  
*Metrosideros* forest

5 49 *Quercus suber*  
a number of trees planted  
in pasture

50 *Diospyros*  
several trees planted in  
small orchard

4 51 *Linociera ligustrina*  
obviously a volunteer  
tree in small orchard

52 *Diospyros*  
several trees planted in small  
orchard

53 *Linociera ligustrina*  
scattered in open  
guava - *Dodonaea* scrub  
in pasture; all seen sterile.

54 *Acacia confusa* Men.  
occasional in open  
guava - *Dodonaea* scrub in pasture

55 *Dodonaea viscosa* var.  
abundant in scrubby  
pasture

low spreading bush,  
leaves light green, flowers  
white, fruit black, fleshy.

small sterile trees  
4-5 m. tall, bark very  
thick and corky.

small spreading tree  
about 4 m. tall; fruit  
still green.

sterile bushy tree 4-5 m  
tall, leaves on lower  
branches much shorter  
more ovate than on upper.  
low spreading tree,  
4 m. tall; fruits turning  
yellow.

large shrub, upper  
part ~~with~~ sparsely branching,  
leaves lanceolate, lower  
browsed part twiggy;  
stiffly much branched,  
leaves ovate.

small tree about 4 m. tall,  
flowers deep yellow.

shrub 1.5 m. tall;  
fruits reddish.



no. checked  
128

La Labels typed

1966 Hawaiian Is.

Oct. 2 - Kilauea, near  
Park Headquarters

in moist *Metrosideros* forest

48156 *Chrysanthemum maximum*  
884 locally naturalized in  
grassy openings

51 57 *Artemisia vulgaris*  
very locally naturalized  
on roadside

52 58 *Nephrolepis hirsutula*  
locally abundant on  
road cut in lava rock

Hawaii - Hawaii Nat. Park 129

rays white, disk  
dull yellow.

sterile, aromatic.

fronds erect



ms. checked  
130

Labels typed

1966

Va. + Md. N.Y. D.C.

Oct. 22 - several kodachrome  
photos of fall colors  
on w. side of Bull Run mts.  
near and at Roland estate.

Oct. 26 - several kodachrome  
of fall colors at and  
near Weems Creek on  
Annapolis Freeway, Md.

Oct. 27 - flew from La Guardia  
north over Tacoma and  
Berks to Albany, N.Y.  
Full fall coloring in area  
of N.Y. city and for some  
distance north, but  
almost gone in Albany  
area. Around Williams-  
town most of trees are bare.  
Here are rounded hills,  
wooded with mostly  
deciduous forest, a few  
scattered evergreens locally.

Nov. 5, 1966 - Georgetown, D.C.

48159 (lab.)

3

common along edge of  
sidewalk.

131

aromatic, somewhat  
depressed; flowers lilac.



Nov. 7 - left Washington Airport 1:30 pm  
arr. Tucuman Airport 7:30 pm.

Nov. 8 trip to Barro Colorado I.  
taxi \$1.50 RR \$1.40 train left <sup>arr. in</sup> 9:40 am.

### Albrook Field -

*Panicum maximum* common  
along r.r. Farther on  
*Pereskia purpurea*,  
*Saccharum spontaneum*;  
locally very abundant  
around Fort Clayton.

~~Barro Colorado~~ Along Miraflores  
Lake *Tectona grandis* is  
planted in a small  
area.

### Pedro Miguel -

Hills between P. M. and Summit  
are covered with very good  
secondary or at least primary  
forest. Rolling plateau-like  
land near Summit  
is open, grassy, with  
scattered bushes and  
small palms. *Saccharum*  
*spontaneum*.

*Carludovica palmata*  
and *Heliconia* sp. are very  
common in undergrowth.  
Most of forest is rather  
poor second growth.

Gambra

Arrived Frijoles 10:30

10 minutes by small boat  
to Barro Colorado I.

Walked up Wheeler Trail to  
Tower around some in this  
vicinity, back by Lake  
Trail and Wheeler Trail to  
Laboratory.



not checked  
134

1966 Panama

Labels typed

Nov. 8 - Barro Colorado Island  
in moist forest

48160

*Quassia amara* L.  
common locally

3

1 61 *Voyria tenella* W.T. Hooker det. P.J.M.  
~~Lepidoptera~~ Maas, 1983

very local

det. Kirkbride  
1977  
3 62

sub. *Psychotria racemosa* (Aubl.) Raeusch.  
occasional

4 63

*Geophila repens* L.  
locally abundant in and  
around edges of opening  
at Tower

8 64

fungus  
~~edge of opening~~ in small  
secondary forest, hanging  
in small trees and shrubs

Canal Zone

135

77 m.

250'

250'

122 m.

400'

500'

153 m.

~~small~~ small understory  
tree or large shrub 4-5 m tall,  
flowers pendent, rose pink.  
plant delicate, white,  
flowers lilac.

prostrate, creeping,  
forming extensive patches,  
fruit red, fleshy, stones  
with inner faces curved.  
black, resembling a coarse  
horse-hair.



1966

Nov. 9 - ~~Atto~~ Albrook jungle  
site tower - 150' tall (46 m)

Canopy rather irregular  
with deep holes and winding  
chasms. Considerable  
diversity in species,  
also in leaf size, crown  
shape. Locally many  
flat-topped trees. Mainly  
rather umbrella-shaped.

at least 2 species of Cecropia.

Few microphyllous trees  
but these quite large.

One orange yellow fld. tree

(Humiria sp.?) at least  
2 spp. of purple fld. lianas.

One or two trees bare of leaves.

A few bromeliads and  
clumps of orchids in  
upper branches of some  
crowns, but not many.

In interior of crowns  
some small epiphytic  
mosses, etc on upper  
sides of branches, but  
no conspicuous growths  
of epiphyte. Very little  
conspicuous stratifi-  
cation of epiphyte  
and not very much  
of leaf size.

Forest said to be 60-70 years  
old but this is apparently  
only an estimate.

Visited tower with George W. Ganger.

Nov. 11 - trip by bus to Colon and  
Galeta Pt. from Panama City

In interior a tall  
bromeliaceous tree has  
just ~~been~~ begun to  
leaf out. Common in forest.  
This is fairly mature second  
growth.

Mangrove areas on ~~east~~  
Atlantic side, a pure  
stand of *Laguncularia*  
with a solid layer of  
*Acrostichum*. Some  
areas lack the *Acrosti-*  
*chum*. May be result of  
crab activity.

Outer parts of swamp  
are *Rhizophora*, much lower stature.

Laboratory on small pier.

Reef with deep pools  
and bands of very shallow  
rather flat topped reef,  
almost entirely dead,  
out to the beginning of the  
outer slope, where there  
is a low growth of  
living corals. A good  
patch of a *Porillopora* or  
chumpy coral. Very light colored.



Back of beach & coral  
flat - reef rock with  
a typical strand community

*Phorolobus*  
*virginicus*

*Fimbristylis cynosu*, *Sesuvium*,  
*portulacastrum*, *Canavalia*,  
thickets of *Conocarpus*, *Vigna*,

Back of this a mangrove  
swamp - *Avicennia*,  
*Laguncularia*, *Sonneratia*



Dec. 16 - trip by small plane,  
Comanche, single motor  
plane, Jacksonville to  
Apalachicola.

3:30 pm. take off from Jacksonville airport.  
Black water creek, trib. of  
St. Johns R.

mostly pine forest, open to  
mostly dense. Some oak  
forest or scrub & undergrowth,  
lvs. chestnut red.

Some mixed deciduous and  
pine forest. Deciduous trees  
most abundant along water-courses.

Much cleared land around  
new airport under construction.

Conspicuous mosaic of  
pine and deciduous forest.  
with rather little mixing.  
Some of pine forest rather  
open. Deciduous perhaps  
on slightly lower ground  
and along watercourses.

Large cleared areas. Some of  
these apparently white sand.  
Some with "natural" outlines,  
possibly wet sand savanna.  
Some angular. Roads show  
white sand.

"Natural" savanna-land  
becomes more predominant.  
Much of this obviously has  
been plowed.

3:40

crossed meandering St. Marys

River. White sand bars and  
beaches.

Forest more and pine - higher  
sandy ground. Not much  
clearing. Meandering stringers  
of deciduous forest. Small  
round patches of deciduous  
forest in pine - swamps.

3:44

Entered Okefenokee Swamp.  
Large brownish areas of  
scrub & very open  
deciduous forest, greenish  
undergrowth. Then water  
with thousands of tiny  
islets of woods. Grassy  
fringes. Areas of pure  
pond pine (?), of *Nyssa* (?),  
*Taxodium* (?), mixtures of  
these, small ponds.  
Dense undergrowth in  
open forest. Areas that are  
mostly water. Much large  
areas of open mixed forest  
with evergreen undergrowth  
and of the undergrowth with  
scattered trees, and with  
patches of ~~young~~ small *Taxodium*.  
Then large scale mosaic of  
Pine (longleaf) and predominantly  
*Taxodium* with some pond pine,  
areas of water and of  
*Taxodium* swamp with  
deciduous undergrowth.  
crossed road and Suwanee R.

3:51



here a narrow black water river.

Followed road through mosaic of pine and swamp. Many small palms. Large trees in deciduous swamp with much *Tillandsia*.

Some of the swamp has large trees. Some mostly young or small trees.

Many round spots of deciduous forest in matrix of pine - prob. slash pine. Areas of replanted pine, probably pulp wood.

Small forest fire.

Many circular deciduous spots, watercourses also with strips of deciduous forest. Otherwise solid pine forest.

This is along Georgia-Florida boundary.

Small lake just south of boundary, with scattered cypress (?) in water.

Mosaic of deciduous spots and meandering strips in pine, much of pine has been cut and replanted. Much of forest rather open. Spots of deciduous forest often dome shaped.

Some areas of mixed pine

and deciduous forest.

(From the lake we have been heading more or less southwest.

In distance to right some open land - savanna or clearings.

Patches of swamp in pine land, forest in these sparse and deciduous.

4:05

Some patches of agricultural land. a few deep black ponds. A meandering river - black water with white sand beaches on convex sides of meanders. Large area of pine with deciduous spots and stream courses.

Then mixed farms and forest, much of this is obviously pine plantation. Some deciduous, probably swamp forest, some more or less natural pine.

4:11

Area of lakes, probably near Lake Park, south of Valdosta, Ga.

Clytville

Mosaic of cleared land and swamp, + pine plantation. Large area of pine, savanna, swamp mosaic, ponds.

4:14

Circular lake, many smaller ones ahead, esp. to left.



Mosaic of open land, some cultivated, pine plantations, swamps, ponds & lakes, these with conspicuous margins of mostly deciduous trees.

To left many small lakes and ponds.

Mosaic of pine, deciduous forest, cleared land, swamp, black water ponds, ponds with broad marsh borders, meandering water-courses with deciduous woods. Locally mostly cultivated land. Poor and sandy. Many small fires. Small saw-mill.

Forest mosaic with sharply defined clearings with mostly what seem to be natural boundaries. Some marshes, and a few small ponds, but no more lakes.

Some of forest is mixed. Some areas of trees with very large crowns, greenish. Lake more or less marshy. Much forest mosaic with almost no cleared land. Gulf ahead and to left - St. Marks Light.

Forest becomes more uniform, mixed, with large crowns,

Then patches of swamp, open scrubby pine, pine becomes more dominant with deciduous patches and water-courses.

Coastal area very swampy, back of St. Marks Light.

4:35

St. Marks, & refinery on it. Large estuary, lined with wide salt-marsh. Sand has been dumped on edge of this from dredging of estuary channel.

Marsh complex with intricate tidal channels and with black ridge on most exposed shores.

Apalachee Bay on left. Extensive marshes with spots of pine forest on it.

Complex of tidal islands in west end of bay, mostly salt marsh, with meandering channel-systems.

Ochlocknee Bay, with extensive complex of ponds, swamp and pine patches on north side, Saint Teresa peninsula, also with ponds on south. Alligator point (Lighthouse Point) is a long spit pointing back on outer side of peninsula.

4:45

Lower Ochlocknee R. lined with broad tidal swamps. Crossed coast headed toward Ile de Chien. Coast lined with pine land. White



sand beach, very narrow.

St. George Sound has tiny inlets in its mouth possibly from dredging.

Île de Chier is a series of beach ridges. Much disturbance, white sand blow-outs - road the

full length. Open pine land inland from narrow part has spotty scrub with sand between.

Along outer side stumps in water. West end is salt-marsh and scrub, open sand.

St. George Island - <sup>east end</sup> sand with grass, low dunes, mostly stabilized, small rafts of ducks - said to be redheads, on sound side.

As island gets wider the inner part is low pine forest, outer part live dunes.

Then east slough, more grass. Goose Island + Goose Island Pond. Pines + grass. Then stabilized or live dunes on outer zone, pine forest on west.

Road and summer homes on outer side.

Bridge. Disturbance on

developed part ~~to the~~ dunes are activated. Beyond this to west a strip of stabilized dunes along outer edge, inner part pine forest, rather open to closed.

Bob likes channel cut through.

Forest. Then grassy flats with ponds along Appalachicola Bay side. A few scrubby pines and some shrubs scattered in grass.

Then pine forest on wide part.

Right house.

Pine forest with strip of stabilized dunes.

Narrow part grassy, part burned. Plot of pine on w. end in grass.

St Vincent I.

East side - salt marsh with ponds inland.

Beach ridge with cabbage palms mixed with a few live oaks + pines.

Ridge, swamp complex. Then freshwater lakes with extensive reed marsh, palm + palm-pine forest.



Ocean side lined with tall open pine forest, westward less good. small dunes.

Inland strips of pine forest & oaks - palmetto scrub scrub <sup>more</sup> dominant toward west end.

Whole island a series of curved parallel beach ridges, with pines on ridges.

scrub and marsh between. Palms <sup>dominant</sup> near inner beach, mixed with live oaks.

Strips of marsh on north side alternating with strips or rows of pine

Salt marsh with oval ponds along on sides of bay and both sides of head of bay. Large marshes with meandering creeks and large ponds at head.

Long narrow bare spit from n.e. point.

Apalachicola Airport surrounded by mosaic of pine & hardwood forest.

arrived Apalachicola.

9.15

Dec. 17 St. Vincent Island

road west of house

loose live-oak forest with palmettos, <sup>mangrovia grandiflora</sup> ~~and~~ <sup>Persea</sup> undergrowth of Ilex vomitoria and ~~fabal~~ <sup>Paurotis(?)</sup>

+ Myrica.

3 wild hogs

5+3 Turkey vultures

1 blue jay

1 crow

1 great blue heron

5 grackles

1 mocking bird

1 red tailed hawk

road turned north & crossed an extensive *Typha* marsh. Strips of open water. Coots.

red-bellied woodpecker on <sup>dead</sup> palmetto trunks.

Paddled through ~~the~~ Back Slough. from

Mostly *Typha* marsh but fringes of *Cladium*, and *Hibiscus*, patches of *Spartina* cf. *patens* and *Scirpus* <sup>validus</sup>. Clumps and margins of *Sabal*.



nos. checked

150

Labels  
typed

1966 Florida

Dec. 17 - St. Vincent's Island  
along Back Slough,  
s.e. corner of island, is  
fresh-water marsh  
*Sagittaria*

48165

X3

in water with *Typha*  
and *Cladium*

X2 66

*Chloris petraea*

rare, on wet ground  
in clump of *Sabal*.

near channel between  
lakes

on low sandy ground

X4 67

*Andropogon glomeratus*  
occasional

X3 68

*Hyptis capitata*

small colony on  
sandy roadside  
in open <sup>live-oak</sup> thickets

X5 69

*Euthamia graminifolia*

abundant on sandy  
roadsides in open live-oak  
thickets.

X5 70

*Rosmarinus*

very common on sandy  
dry soil, especially  
in disturbed places and roadsides.

X5 71

*Myrica*

common in thickets on  
flat sandy ground.

151

petals white.

small tuft.

erect, to 2 m. tall,  
small tufts.

erect, unbranched  
except at base,  
1 to 2 m. tall.

bushy, to 0.7 m tall,  
aromatic, flowers  
lavender, palate  
whitish with maroon  
punctuation.

shrub 3 m. tall.



in *Quercus virginiana*  
forest on low sand  
flat.

48172

15

*Euthamia*

small colony in  
shaded area

13

73

*Polypodium polypodioides*  
abundant on leaning  
*Quercus* trunk

15

74

*Persea borbonia*

rare in ~~forest~~

84

75

*Smilax*

rare, in climbing  
in *Ilex vomitoria* in opening

Dec. 17 - ~~back~~ St. Vincent Island  
back of St. Vincent Point

15

76

*Juniperus*

common on beach ridge  
in palm forest, this tree is at  
edge of salt marsh

Dec. 17 - St. Vincent Island, on  
Magnolia Ridge, south of  
Back ~~Point~~ Bay.

in ~~oak~~ oak - magnolia  
forest on sand ridge.

63

77

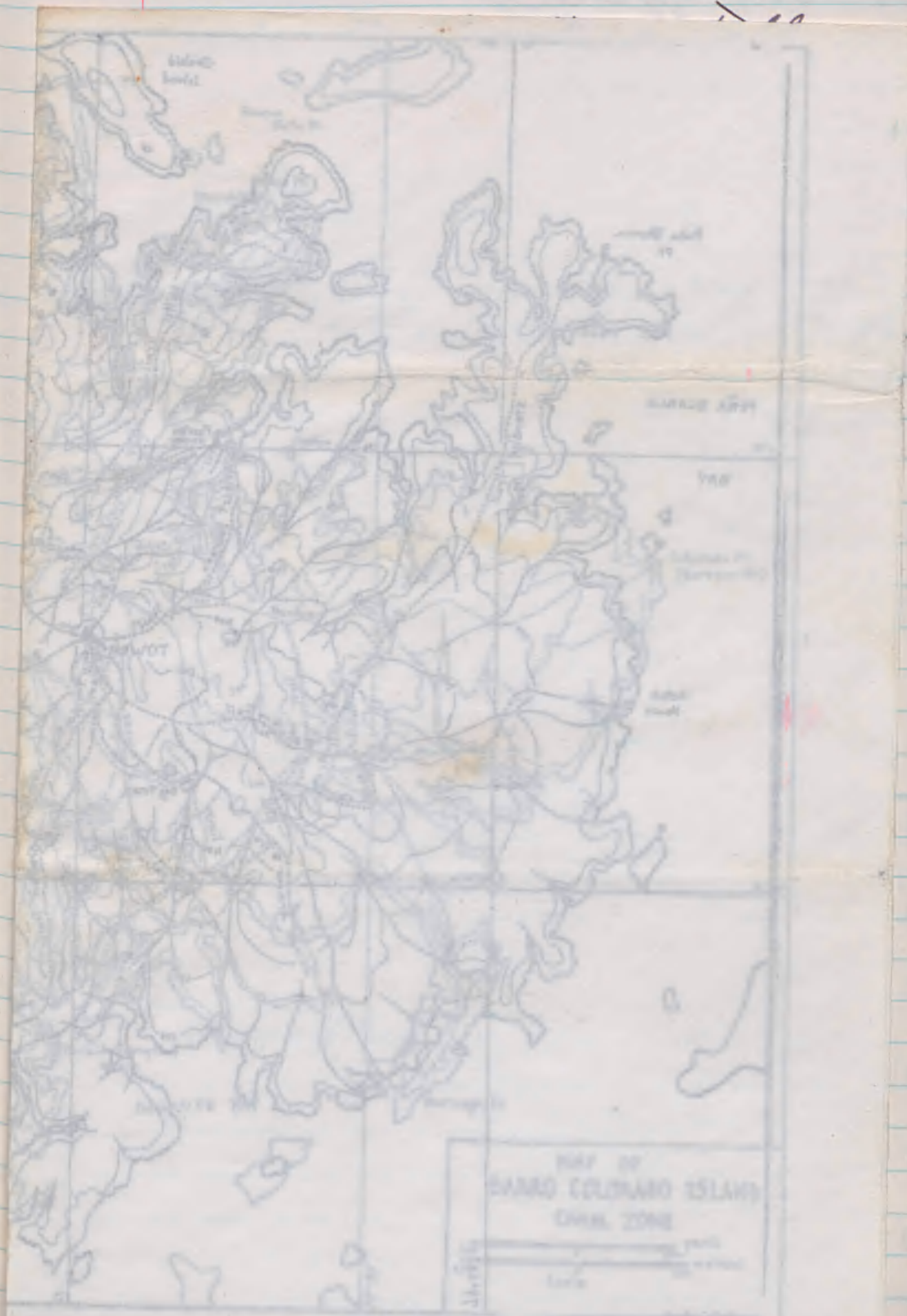
*Osmanthus americanus*?

Dec. 17 - St. Vincent Island,  
coast south of Oyster Pond  
in damp low spot  
back of low dune ridge

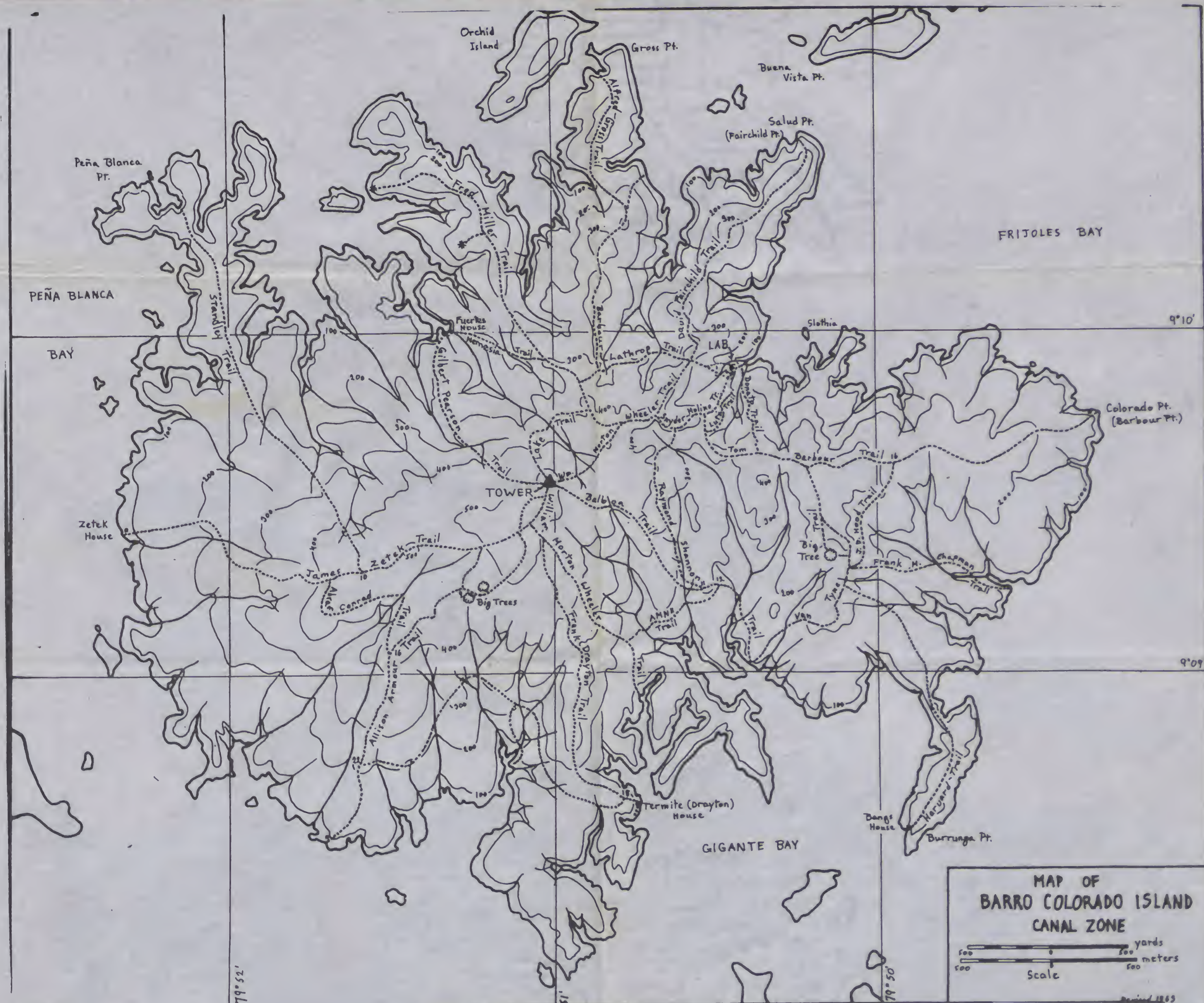
12

78

*Cyperus*  
rare









Labels typed

in *Quercus virginiana*  
forest on low sand  
flat.

48172

J5

*Euthamia*

small colony in  
shaded area

J3

73

*Polypodium polypodioides*  
abundant on leaning  
*Quercus* trunk

J5

74

*Persea borbonia*

rare in ~~forest~~

J4

75

*Smilax*

rare, in climbing  
in *Ilex vomitoria* in opening

Dec. 17 - ~~back~~ St. Vincent Island  
back of St. Vincent Point

J5

76

*Juniperus*

common on beach ridge  
in palm forest, this tree is at  
edge of salt marsh

Dec. 17 - St. Vincent Island, on  
Magnolia Ridge, south of  
Back ~~Point~~ Bay.

in ~~oak~~ oak - magnolia  
forest on sand ridge.

J3

77

*Osmanthus americanus?*

Dec. 17 - St. Vincent Island,  
coast south of Oyster Pond  
in damp low spot  
back of low dune ridge

J2

78

*Cyperus*

rare

plants about 1 m. tall

small twisted tree 4-5'  
m tall, fruit dull black.

small tree



nos. checked

154

1964 Florida

Labels stopped

48179 *Polygonum cf. punctatum*

X6

common

X1

80

*Cyperus*

rare

X1

81

*Bacopa monnieri*

rare

on low <sup>open</sup> sand dune back

of beach

X1

82

*Shippia nodiflora*

locally common

X5

83

*Croton*

very common

X5

84

*Physalis*

common locally

X1

85

*Oenothera*

occasional to common

X4

86

*Cenchrus carolinianus*

common

in open oak forest south  
of Oyster Pond

X4

87

(lichen)

on trunk of live oak

X4

88

*Parmelia*

on trunk of live oak

X4

89

(lichen)

common locally  
on sand

X4

90

*Cladonia*

common locally  
on sand

X4

91

(lichen)

common locally  
on sand

X1

92

(lichen)

rare on sand

X1

93

(lichen)

rare on sand

Franklin Co.

155



Dr. Fosberg



24 Feb 1991

Dr. Fosberg,

I found a couple of lichens collected  
by you 17 Dec 1966 from Florida. They  
were in the undetermined material in the  
back log. I have made determinations &  
prepared the packets so they can be  
stored in the collections. For your  
records they are:

Fosberg Number 48189

Cladonia prostrata Evans

Fosberg Number 48191

Cladonia leporina Fr.

Sherry K. Pittman



no checked

154

1964 Florida

Labels typed

48179 Polygonum cf. punctatum  
common

80 Cyperus  
rare

81 Bacopa monnieri  
rare

on low <sup>open</sup> sand dunes back  
of beach

82 Shippia nodiflora  
locally common

83 Croton  
very common

84 Physalis  
common locally

85 Oenothera  
occasional to common

86 Cenchrus carolinianus  
common

in open oak forest south  
of Oyster Pond

87 (lichen)  
on trunk of live oak

88 Parmelia  
on trunk of live-oak

89 (lichen)  
common locally  
on sand

90 Cladonia  
common locally  
on sand

91 (lichen)  
common locally  
on sand

92 (lichen)  
rare on sand

93 (lichen)  
rare on sand

Franklin Co.

155

stems weak,  
flowers white.

prostrate

prostrate, leaves stiff,  
thick.

suffrutescent, branched.

~~thick~~  
prostrate, <sup>lower</sup> stems  
deeply buried in sand.  
bud yellow.

tufted

bright pinkish red.



Area south of Oyster Pond is a series of zones of oak forest, pines, & rather open sand ridge with *Rosmarinus* dominant except where there are bushes and trees. The sand is pure fine quartz. A number of lichens are locally abundant on the ground, both in open and under oaks.

Along the beach & east of the Oyster Pond inlet there is a sand flat 50 m or so wide, irregular both in surface and in width.

This gradually changes to very low dunes inland. The dunes have a sparse, or locally open vegetation of *Croton* sp., *Physalis* sp., *Oenothera*, *Spartina*, *Sporobolus virginicus*, etc. Inland are depressions, under pines, with sedges, *Polygonum*, etc. in moist soil.

On the inland side of Oyster Pond are parallel ridges, one of which is somewhat higher than the others and has a forest of *Magnolia*, *Quercus nigra*, *Q. agrifolia*, *tabal*, *Pinus*, etc. *Capriola cruciata* is

a species of *Quercus* tall, to 3 m, branched, with fruit.

common here and forms large lianas, stems to 3-5 m diam., climbing in trees. *Tillandsia usnevide* is very abundant, hanging on *Quercus*, but not from *Pinus*. Not seen on *Pinus* at all. *Magnolias* here are enormous. Little undergrowth ~~is found~~ under this forest, except locally *Paurotis* or *Phytolacca* + *Ilex vomitoria*. ~~to 2 m~~

*tabal* forms almost pure ~~stippled~~ *stippled* especially along Back Bay. *Rhus copallina* up to 27 m. tall.

Road along east end is on top of beach ridge, with marsh behind it. *tabal* common, with *Quercus virginiana*, occasional *Carya* sp. Going northward along this ridge, as it gets wide, the forest becomes an almost pure forest of *tabal*, which continues, with some admixture of *Quercus*, etc. ~~to 2 m~~ some *Pinus*, much small *Juniperus* in undergrowth. Extensive marsh of *Juncus* in angle of St. Vincent's Point.



Dec. 13. St. Vincent's Island

Oyster Pond - a large open water body, western end surrounded by marsh. patches of *Typha* in east end.

Many redwing blackbirds, grackles.

Five oaks here have little *Tillandsia*.

In central part of island west end of "Sambor Walk" open live oak forest, with scattered yaupon, *Myrica*, a broken but prominent lower shrub layer of *Panrotis*, very few *Sabal*, much *Tillandsia* on *Quercus*.

photos 2 b+w 2 kol.

Along the Walk is a semi-open mixture of tall pines (30m), medium oaks (*Q. nigra*) & *Sabal* tangled tall shrubs - *Ilex vomitoria*, *Quercus virginiana*, *Myrica* etc. a 1-2m layer of *Panrotis*. The tall shrub layer tangled with *Vitis rotundifolia* and *Sinilax cf. pseudochina*.

photos 2 b+w 4 3 kol.

Farther along the Walk skints a large area of

*Typha* marsh to left - possibly Lake 5.

A zone of low <sup>wet</sup> ground, just a few inches above lake-level, covered by an almost pure stand of *Sabal* about 7-10m tall, with almost no undergrowth except a few young *Sabal*, and a thin herb layer of *Rhynchospora*, *Pluchea*, *Panicum*, etc. One great pine on a very slightly higher spot. Canopy of palms almost closed. In a few openings there are *Myrica* shrubs about 3-4 m. tall.

On a bit there is a pond & marsh on right, also, with palm forest on low ground between the 2 water bodies.

West end of Lake 5, along causeway, solid *Cladium* marsh, a few clumps of slender shrubs.

North of Lake 5, end of Lake 4 marsh has a large stand of a coarse *Marantaceae* with large leaves, slender infls. to 3-4 m. tall.

Net. This and Lake 5 is open pine forest with scattered *Sabal*. Loose shrub layer 3-5 m tall, *Myrica*, *Rhus copallina* (to 7m) *Bumelia*,



with a continuous  
2 m layer of *Paurotis*.

End of peninsula bet Lakes 4, 5  
photos across marshes to s.w. n.  
b + w + red. - pine in distance.

Photos of the western end  
of the big salt marsh  
area.

Photos of rattler on road  
south of ~~big~~ salt lakes

Large area between  
Lake 5 marsh and Big Bayou  
has been logged ~~20~~ 20 years  
or more ago, is an open  
sandy, bushy pine woods.

Dec. 19. south of Back Flough, s.e. corner  
~~of island~~ ~~of island~~ ~~of island~~

low ridge with large  
*Magnolia*, *Quercus nigra*  
and *Sabal*. Irregular  
shrub layer of *Ilex* spp.  
*Paurotis*, some *Myrica*.

Large water oaks have a  
heavy epiphytic growth  
of *Polypodium polypodioides*  
on lower ~~to~~ large limbs.  
Tillandsia on smaller  
branches. Some *Q. virginiana*.  
Scattered large pines but  
very few.

Variation in pine cones  
from scale faces almost  
flat with tiny point  
in center to having  
an elevated angular  
face, giving a knobby  
appearance.

Chenier on sand ridge  
varying from closed  
with large trees to open  
with small trees and  
much *Rosmarinus* on  
sand, a few *Ilex* shrubs.  
The oaks vary enormously.  
A form with broad ~~obovate~~  
bright green leaves  
seems certainly to be  
a distinct species.

Between this and the  
*Magnolia* ridge there  
is a mixed *Q. virginiana*,  
*Q. nigra*, *Sabal*, *Paurotis*  
closed forest, a little pine  
again seeming an accidental  
intruder. Much *Ilex* in  
undergrowth.

Marsh area toward Ft.  
Vincent Pt. and on both  
sides of Dry Bar is solid  
*Juncus*. Hammocks with *Juniperus*,  
*Sabal* sometimes pine. Along  
Dry Bar area of *Andropogon*  
(to n 168)

Photos



nos. checked  
162  
Labels typed

1966 Florida

Dec. 18 - north interior of  
St Vincent's Island

in open brushy sand  
plains with scattered trees

48194

*Pinus virginiana*

X5

~~tree about 12 m. tall~~

X2

95

*Pinus virginiana*

locally common, only  
found here, on island,  
said to grow in only the poorest soils

X2

96

*Quercus*

locally common

Dec. 18 - St. Vincent's Island,  
Piccaline, north coast  
near west end

in pine forest on low ground  
near bay shore

X4

97

*Sophora*

common locally

X6

98

*Hypericum*

common

X4

99

(legum.)

common along roadsides  
in openings

X

48200

*Lesbania*

X1

locally abundant in low  
open wettest spots

Dec. 18 - south shore of  
Big Bayou, St. Vincent's Island

X4

01

*Baccharis* ♀

X4

02

*Baccharis* ♂

common near shore

Franklin Co.

163

tree about 12 m. tall,  
locally called "sand pine".

shrub 3 m. tall.

shrub 1-1.5 m. tall; flowers  
orange red, calyx red.  
small shrub.

erect herb, dead at this  
season, 2-3 m. tall, pods  
pendulous.  
erect 2-4 m. tall, dead, leafless.

shrub, 1 m. tall.



nos. checked  
164

1966 Florida

Labels typed

Dec. 18 - center of St. Vincent's  
island south of Big Bayou  
in semi-open sandy  
scrub-land.

48203 *Hypericum*  
very common

82 04 *Hypericum?*  
occasional

82 05 ?  
very common

0

Dec. 18 - St. Vincent's Island  
just in from south coast

5 06 *Leiorhaphis*  
in edges of sandy pine-land  
very local

Dec. 18 - St. Vincent's Island  
just south of Oyster Pond  
along outlet channel

8 07 *Polygonella*  
in live-oak <sup>pine</sup> woodland

83 07 *Polygonella*  
occasional in sandy opening

82 08 *Digitaria*  
occasional in sandy opening.

Dec. 18 - St. Vincent's Island,  
~~between~~ just north of  
Lake No 5 marsh

85 09 *Myrica*  
common in open brushy forest

85 10 (eric.)  
common in open brushy forest

Franklin Co.

165

shrubs 0.5 - 1 m. tall,  
(or more)  
bright green.

dwarf shrubs, sterile.

shrub 0.5 - 1.5 m. tall,  
bright green, very erect.

dwarf shrub up to 0.5 m.  
tall, stems green above.

erect; flowers white

shrub 3 m. tall.

shrub 2 m. tall, flowers  
pink.



nos. checked  
166  
Labels typed  
48211

1966 Florida

Usnea

85

abundant on Salix growing  
in shallow water in marsh

Dec. 18 - St. Vincent's Island  
on "Lamar Wall" bet.  
Lake No. 5 and Back Bay  
in pine and tabal forest

85

12

*Rhynchospora*

very common in road  
clearing

89

13

*Solidago odorata*

common in more open places

85

14

(grass)

common in old road

82

15

*Quercus nigra*  
occasional

Dec. 18 - St. Vincent's Island  
north shore of Oyster Pond

82

16

(scrub?)

very local on muddy shore

81

17

*Hedyotis uniflora*

very rare

Dec. 19 - St. Vincent's Island  
s.e. corner, s. of Back Slough  
in oak forest on stabilized  
low dunes.

86

18

*Ilex vomitoria*

common in undergrowth

85

19

*Quercus virginiana* L.  
common

Franklin Co.

167

tufts, erect.

erect, very aromatic  
when broken.

tufts, culms erect.

small understory tree  
(others seen larger)

very prostrate, leaves  
appearing in one plane.

rigid shrub 3 m. tall; fruit

fleshy, scarlet.

tree 8 m. tall, wide spreading,  
leaves pale grayish beneath,  
flat.

(Ath. p. 174)



glomeratus + Spartina.

On Dry Bar almost pure  
pine, locally some Sabal  
& some Quercus virginiana.  
Large areas of Cladium  
in low places.

Sabal forest toward  
St. Vincent's Point has  
considerable young  
Juniperus, Persea, and  
Ilex vomitoria, also  
~~small shrubs~~ Callicarpa,  
these forming a <sup>thin</sup>  
undergrowth. <sup>Bumelia</sup> ~~Quercus~~  
forms a small part of  
the canopy. One can  
walk freely in most  
places. Conspicuous  
signs of fire - blackened  
trunks.

Forest generally about 10-15  
m. tall, closed.  
Vitis locally common.

Rubus sp. on ground, rare,  
also Asplenium platyneuron.

All Juniperus seen young.

### Forest communities

- ✓ Closed slash pine
- ✓ Open slash pine with grass
- ✓ Slash pine with oaks & Sabal.
- ✓ Open oak
- ✓ Closed live oak
- ✓ Closed <sup>water</sup> oak with magnolia
- ✓ Closed Sabal
- ✓ Open slash pine with  
Paurotis & other scrub.
- ✓ Slash pine & Sabal
- ✓ Juniperus - Pinus - Sabal hammock.

### Scrub communities

- ✓ Mixed scrub, ~~oak~~, etc.
- ✓ Myrica - Paurotis
- ✓ Mixed scrub with  
scattered sand pine.
- ✓ Baccharis

### Open communities

- ✓ Rosmarinus in dunes
- ✓ Pioneer plants on beach dunes.

### Aquatic communities

- ✓ Typha
- ✓ Cladium
- ✓ Thalassia (?)
- ✓ Spartina patens
- ✓ Scirpus cf. validus
- ✓ Scirpus cf. paludosus
- ✓ Juncus
- ✓ Andropogon glomeratus
- ✓ Vallisneria
- ✓ Spartina alterniflora
- ✓ Andropogon virginicus



Dec. 19 - Flight of Apalachicola  
to Jacksonville in small  
plane - left Apalachicola 3:17 p.m.

Apalachicola estuary  
bordered by broad belts of  
tidal marshes, with winding  
channels. On east side  
the marshes have curious  
rounded lighter areas.

East of river extensive areas  
of forest with occasional  
clearings.

Next estuary to east has  
projecting delta horns extending  
out on each side of  
channel.

Coast to east appears to  
be a drowned coast, with many  
complicated indentations.

3:39

Offshore are at least three  
to ~~main~~ banks, westernmost  
roughly circular, with a  
~~roughly~~ diverse upper  
surface.

This whole coast has a  
broad strip of salt-marsh  
without trees and with  
intricate tidal channels and  
very elaborately lobed  
coastline. Extends s.e. as far  
as ~~can~~ eye can see.

Inside this a belt of  
wood, left now a less ~~untouched~~  
~~untouched~~ for some

distance inland. This  
is mostly green, becoming  
irregularly more deciduous  
inland, in mosaic ~~forest~~  
pattern. Some cleared  
land, but not much.  
Perry ~~is~~ in middle distance  
to right. Around it a  
higher proportion of land is  
cleared. Quite a few small  
black-water ponds.

3:50

3:54

Considerable swampy forest  
more ponds.

Network of ~~white~~ white ~~roads~~  
several large ponds. ~~green~~ black-water

4:00

Rather deep somewhat meander-  
ing river crossing course  
is Suwannee.

East of it is mostly cleared  
land, some apparently  
pasture, some cultivated,  
some pine plantation. Some  
of pasture clear, some with  
scattered trees. Soil very  
spotted, white with  
dark spots - possibly peat  
deposits.

4:04

Live oak on right. Large irregular  
scar is phosphate strip mine.

Water very green.

Many ponds to right, mostly  
about circular.

Land about 1/2 cleared, forest



4:09

mostly evergreen.  
Lake City on right, phosphate  
strip mine and plant on left.  
Country more wooded, some  
deciduous, some pine, some  
obvious pine plantation.  
Watercourses margined by  
hardwoods.

4:13

Large area of woods, mostly  
pine, some small bits and  
patches of deciduous.  
Large area of fine-textured vegetation  
apparently swamp, some open  
water, on right, water black.  
Then mosaic of pine and  
deciduous forest, some scrub, a little  
clearing. Then mostly  
pine forest.

4:19

Then many clearings.  
Meandering stream with  
white sand beaches on convex sides  
of meanders.

Then mosaic of dense forest  
open forest cleared pasture. Forest  
mostly pine.

4:27

Becomes more deciduous, in large  
patches.

A strip of clearing.  
Railroad + main highway.  
Jacksonville ahead and to right.  
reached airport.

4:33



nos. checked  
174  
Labels typed

1966 Florida

48220  
X 5

Quercus

occasional

X 2

21

Quercus virginiana L.

occasional, ~~is~~ around  
openings

X 2

22

Quercus virginiana L.

occasional around  
openings

X 1

23

~~Usnea~~ Usnea

on dead twigs

X 5

24

Quercus

occasional

same - on open white sand

X 2

25

Cladonia

~~26 Cladonia~~ occasional

X 5

26

Cladonia

abundant

same - on edge of slough

X 2

27

Nyssa

one tree only growing in mud

Dec. 19 - <sup>middle of shore</sup> east ~~side~~ of St. Vincent  
Island

X 2

28

Sporobolus virginicus

very common at top of beach  
in quartz sand

X 2

29

Scirpus

in edge of marsh  
back of beach ridge,  
locally dominant

Franklin Co.

175

spreading tree 6-7 m. tall,  
leaves green on both sides, flat.  
small spreading tree,  
leaves gray beneath, very concave.  
small spreading tree,  
leaves gray beneath,  
very concave.

shrub 2 m. tall, leaves  
green on both sides, flat.

tips of branches red.

spreading tree 8 m. tall,  
leaves falling, fruit  
from ground beneath.

culms ascending from  
deeply buried rhizomes



Dec. 20 - visit to Browne property near Fort Caroline, across from Jacksonville

Previous owner built dam sometime after 1869, washed out before 1924  
Browne bought in 1884

Dam between 2 points, to make garden in what is now marsh. Marsh died and dried out. Ditch made around periphery of present marsh.

There was a previous dam, probably in English time, for water power (probably) to grind, etc. English had large turpentine works.

Formerly much more pine than now. Old stumps, barrel hoops, etc.

Mr. Jones, amateur archaeologist, has dug around. Found axes, English money (1736!). (lives in Jacksonville).

Marcus William Jones. Is a technician in St. Vincent's Hospital.

Dr. Wm. Sears, formerly of university has done ~~palaeontological~~ <sup>archaeological</sup> work also archaeology. Now in another college south in Fla.

Mrs. H. G. Johnson  
Rt. 1  
Box 437 K  
Jacksonville

Pond with water lilies, Phragmites (20 ft. above s.l.)

Mrs. Helen Johnson wrote N.C. about a 20 acre piece of land next to Mr. Browne on the south, belonging to Mr. Harry Queen. Browne would like to have N.C. buy this. (Queen paid 18000 in 1900 for it)

Another piece that would fill out the place belongs to a Mr. Phillips. This is cut off from the creek by the Queen piece.

Mr. Queen owns Spanish Point, 15 acres, which Mr. Browne sold him. Mr. Guthrie has a piece along the highway, has a beauty parlor. Bruce Guthrie is a young friend of Mr. Browne, perhaps 18-20 years.

The Queen piece that is for sale is cut by Little Mt. Pleasant Creek, which has marsh along it. Two pieces of high ground, a few acres each.

Hurricane Sept. 1964 did a lot of damage.

Ximenesia (possum plum or Spanish plum) freezes to ground at 20° F



The Queen property has rather open mixed forest large trees scattered, thick tall shrub layer of *Persea*, etc. *Ximenesia*, *Quercus*

A small Indian mound being excavated by people from Childrens Museum.

Large trees are *Q. virginiana*, *Persea*, *Carya*, *Q. phellos*, *Magnolia*, *Q. nigra*

Phillips property has head of Little Mt. Pleasant Creek, with springs at foot of steep bluff of sand. ~~at~~ Run about 5-6 m deep, choked with tall shrubs. Large trees were partly knocked down by hurricane, leaving the forest in a rather bedraggled condition. *Magnolia virginiana* in spring 30 m tall, at least 75 cm dbh. many other large ones. *Magnolia grandiflora* here too, but smaller.

Both Browne & Phillips properties are part of an old Spanish grant bought by Antelam Gay.

Phillips place runs 1200' along highway and 1600' toward Mt Pleasant Creek.

Reports on excavations of Indian mounds on Browne property by Wm. H. Sears

Excavations on Lower St. Johns River, Florida.

Contr. Fla. State Mus. Social Sciences 2: 1-35, 1957.

Two Weeden Island Period burial mounds, Florida.

Ibid. 5: 1-35, 1959.

The Browne Mound was one of the few undisturbed burial mounds and village sites excavated in Florida. The various other shell mounds, located along the shore, had been partly sold as commercial shell. The Browne mound was away from the shore. Map of Browne property (Sears 1957 fig. 1) shows locations of mounds.

Jacksonville University, <sup>Jacksonville,</sup> Arlington, Fla.  
president - Robert H. Spiro

Mr. Browne does not seem to know who owns the mounds.



The vegetation is principally a closed *Quercus virginiana* - *Quercus nigra* forest about 15 m tall, with *Carya* sp. scattered in it, often emergent, *Sabal* quite common, and *Magnolia grandiflora* locally common.

Along highway there is a thin pine stand. Locally are scrubby areas. Part of the forest is rather open, apparently the result of the 1964 hurricane. Many fallen trees and limbs.

Forest around the marsh area between Pirate Point and the house area is almost entirely *Sabal*, which is said to grow much faster down at low elevations where ground is more continuously wet.

The oaks are heavily draped with *Tillandsia usneoides*, and *Polypodium polypodioides* is very common around bases of trunks.

Trees seen (incl Phillips tract)

*Quercus virginiana*

*Quercus nigra*

*Persea borbonia*

*Magnolia grandiflora*

*Magnolia virginiana*

*Carya* sp.

*Pinus*

*Liquidambar styraciflua*

*Ilex opaca*

*Taxodium distichum*

*Sassafras albidum*

*Acer rubrum*

### Shrubs

*Ximenesia americana*

*Euroyonus americanus*

*Callicarpa americana* (French mulberry)

*Hammamelis virginiana*

*Vaccinium* cf. *corymbosum*

*Aralia spinosa*

*Ilex vomitoria*

*Myrica*

near pond { *Oxydendrum arboreum*  
*Lymflocos tinctoria* ?  
*Pieris* ?

*Ilex* cf. *laevigata*

*Juniperus*

*Arundinaria*

*Osmorhiza* ?

*Leucothoe racemosa*



## Vines

Smilax pseudochina  
 Smilax cf. laurifolia  
 (Asclepiad.)  
 Vitis sp. (3 dm dbh)  
 Capriola cruciata  
 Berchemia scandens  
 Cocculus?  
 Gelsemium scandens  
 Mikania scandens  
 Vitis rotundifolia

## Ferns

Asplenium platyneuron  
 Polypodium polypodioides  
 Woodwardia virginiana  
 Thelypteris cf. dryopteris  
~~Woodwardia~~ Woodwardia areolata  
 Pteridium aquilinum

## Other herbs

Bidens leucantha  
 Lesine  
 Uniola  
 Solidago odorata  
 Nymphaea  
 Myriophyllum  
 Typha cf. angustifolia  
 Cladium  
 Monotropa uniflora  
 Tillandsia usneoides  
 Cyperus sp.  
 Sida sp.

Elephantopus nudatus  
 Phytolacca americana  
 Eupatorium capillifolium  
 Cirsium sp.  
 Panicum sp. (cf. P. clandestinum)  
 Panicum sp.  
 Mitchellia repens  
 Trichostema lanceolata  
 Sanicula sp.  
 Diplazium  
 Galium cf. bermudense  
 Hypericum cf. fruticosum



Some live oak was cut (during Civil War?) or 1878?

Live-oak - Water-oak forest - large trees, canopy almost closed. Draped with *Tillandsia*, branches & bases of trunks covered by *Polypodium*.

Patches of *Paurotis* in undergrowth of *Persea*, *Ilex vomitoria*, oak saplings, *Ilex opaca*, *Rhododendron* (Azalea), *Myrica*

In places the *Paurotis* is almost continuous. In some areas, the canopy is broken because of hurricane damage.

Photos - b + w & color.

Pond about 2 acres, with water lilies, *Myriophyllum*, patches of marsh - *Typha* - *Cladium*. fine grove of *Taxodium*, *Sphagnum*, *Dryopteris*, *Woodwardia* in mud around edges.

One area of open forest is mostly *Magnolia grandiflora* to 15 m and 5 dm dbh, some oak + *Persea*. ~~some~~ a few *Liquidambar*, a few *Carya*, a few *Sabal*.

This is said to have been closed forest before the 1964 hurricane. The *Carya* reach 25 m or even 30, sweet gum, too. One *Magnolia* about 20 m.

Rather open swamp - pond, small trees & large shrubs scattered through it, *Rumex* on surface, *Acer rubrum*, *Magnolia virginiana*, etc. This pond has an old ditch leading out of it, said to have been dug by a man from Massachusetts named Mitchell, who wanted to make a cranberry bog of this swamp.

Large flock of herons - prob. Louisiana or little blue. Some black crowned night heron, 2 ducks.

Mr. N. G. Johnson  
Elgin 55411



no. checked 1966 Florida

186

Labels typed

Dec. 21 - St. Johns River, just east of,  
between Jacksonville  
and Mayport, ~~at Pleasant~~  
Creek and Mud Flat Creek  
in live-oak forest

48230

Gordonia

✓ 2

around edges of swamp

✓ 2

31 (erica.)

around edges of swamp

✓ 4

32 Persea

on slightly elevated ground  
very common

~~Duval Co~~  
Duval Co

187

small tree (others seen  
to 20 m. tall), some leaves turning red.  
sterile shrub, 1 m. tall,

"pipe-stem plant"  
shrub 3-4 m. tall; fruit  
black, pedicels reddish,  
slightly swollen.



~~Dec~~ 1966 Florida

Dec. 21. Little Talbot Island  
State Park.

Southern part is partially  
stabilized dunes.

Principal woody vegetation  
is *Myrica* and *Baccharis*  
*halimifolia*, forming a  
very open scrub.

In the north end there  
are hammock-like areas  
with live oaks, palmetto, etc.



190

191



Matlsson



